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COLLABORATION

Collaboration can be of two kinds, it seems. There are Brothers Hitler and Hirohito, with the new brand—"collaboration" of the enslaved at the point of the sword. Since Americans just don't like that type of collaboration, we are in a war about it.

Rather to be preferred is the teamplay which is making possible the development of the newest of man's brain-children, the electron microscope. There was first an Englishman, with basic discoveries regarding electrons; then an Austrian, a Frenchman, two Germans, a Belgian, two Canadians and several Americans have spliced together the contributions of numerous workers. So that today the electron microscope is a reality, and is in use in research laboratories in several nations. Not limited by the wave length of light, this new tool can magnify 50 to 100 times greater than the finest of previous microscopes. And there is one under construction in New York today that will magnify 1 million times.

Already the virus of tobacco mosaic has been identified by the electron microscope; other viruses are under scrutiny as well as the minute morphology of bacteria and the molecular composition of various compounds. Seen on a fluorescent screen certain bacteria are now known to possess very tough body walls, others have flagella-like appendages. Certain organisms under attack by various chemical compounds have been studied, and the hitherto unknown is beginning to unfold like the pages of a child's primer. Erythrocytes appear to be 2 feet in diameter under the screen of this instrument. Is it too much to expect that many, many of the secrets of life and death, sickness and health will be revealed soon? Numerous serious workers believe that science has opened the door to an entirely new and inspiring vista.

The right sort of collaboration has brought us this great new gift. May Hitler's sort soon perish from this earth—there just isn't room for two kinds.

CANCER

The real existence of the greatest national emergency in our history is now recognized by every intelligent American citizen. Along with the vast demands made upon our courage and patience by this situation is a keener realization of our responsibilities to care for the lives and happiness of those unfortunate people who find themselves in personal physical adversity.

The greatest of all these menaces to the health, happiness and life of our people is cancer. The quality of its threat and of its power as a killer is unique. War itself may take a larger toll of Americans in the years to come. Various heart conditions of cardiac disease may do the same thing. Neither, however, will so silently, so grimly, and with such evil power to disintegrate moral stamina, invade the lives and families of our people. We must not lose sight of this fact. No matter what our emergency obligations may be, we must not forget this great continuing enemy of mankind.

Fear, ignorance, and delay are the three allies of cancer which lead to disaster and death. They can be overcome by knowledge of the early signs and symptoms of the disease and of the methods of fighting it. The American Society for the Control of Cancer throughout the country has for years been engaged in this battle. It is making progress. It must not lose the gains made, and indeed must drive ahead. The defeat of fear, ignorance, and delay lies in the adop-

tion of an intelligent and controlled point of view by each individual. These same qualities will contribute to his or her success in fighting whatever the national emergency may present.

The fight against cancer is an ally in the fight against our foreign enemies. The methods are much the same. The qualities appealed to in the individual are similar. The complete victory spoken of by the President in discussing the international situation is just as applicable to our fight against cancer. Both victories can be gained. We must recognize how closely they may be related to one another and must act speedily, courageously, and untiringly to make both possible.

C. C. Little.

Review of the Surgical Treatment of High Blood Pressure

RALPH M. STUCK, M. D.
Denver, Colorado

ARTERIAL hypertension is a disease of primary medical importance. While medical therapy is frequently the only available treatment, it is adequate much of the time to keep the patient well. In many cases, however, patients develop progressively more severe hypertension in spite of all medical measures. Disabling symptoms become more pronounced, and the patient may be confined to bed or remain in bed most of the time because of the recurrence of symptoms on getting up.

In this latter group of cases of arterial hypertension are individuals with severe nervousness, restlessness, easy fatigue, and disabling headaches. Their hypertension is usually extremely high, although this is not invariably true. The diastolic blood pressure, however, is usually above 100 mm. and seems to be fixed at this level. Part of this group is made up of cases with severe acute blood vessel changes demonstrated in the ocular fundi; these may also show malignant hypertension with extensive vascular changes and nephritis, and may result in rapid death. But in the remaining cases, there are many which are less severe and which can be relieved by sympathectomy of the kidneys. ***Fig 1.***

Sympathectomy of the kidneys, as a rational method of treating essential and malignant hypertension, is based upon the experimental studies of Goldblatt[1] and his associates.

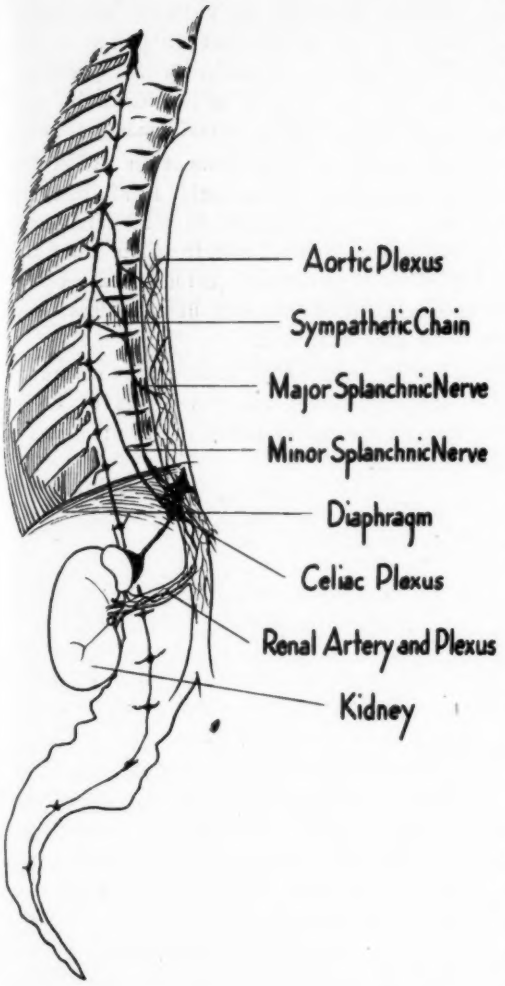
They have demonstrated in animals that, by gradually compressing both renal arteries with small silver clamps, they are able to produce a renal ischemia with resultant arterial hypertension.

This experimental hypertension, once developed, has most of the characteristics of human hypertension, being chronic and progressive, and showing many changes expected in other organs of the body. The lack of pathological lesions in the kidneys of these animals is due to the fact that the flow of blood is slowed before reaching the kidneys and not within them.

The hypertension in these experimental animals is present as long as the blood flow to the kidneys is slowed and while a definite renal ischemia exists. When the clamps are loosened from the renal arteries, the blood pressure falls; and the vessel changes and other pathological alterations throughout the body directly related to the hypertension begin to improve. This experiment suggests that the beneficial results from sympathectomy are due to an increase in the flow of blood through the kidneys.

Following a sympathectomy, there is dilitation of arterioles in the part of the body formerly supplied by these nerves. It is reasonable to suppose that a sympathectomy of the kidneys will cause an increased flow of blood through them, thereby increasing their glomerular filtration bed and function. Goldblatt in discussing the correlation between experimental and human hypertension makes the following statement: "Since the renal factor [of hypertension] in man is frequently due to narrowing of the lumen of only the arterioles of the kidney, without narrowing of the lumen of the large arteries, improvement of the circulation might result from the various surgical operations on the nervous system, as a result of relaxation of those arterioles in which the organic changes are not fixed. The lowering of blood pressure reported . . . by surgeons using various procedures which, directly or indirectly, affect the

Presented at the regular meeting of the El Paso County Medical Society in El Paso, Texas, October 13, 1941.



vasomotor nervous mechanism . . . may, therefore, be due mainly to one cause; namely, the improvement of the circulation through the kidneys, and not, as has been suggested, directly to the relaxation of the arterioles in a large part of the vascular bed of the abdomen, independently of any effect upon the kidneys. The latter view has no support in experimental observations."

These observations of Goldblatt, therefore, condemn all sympathetic operations for hypertension that include abdominal ganglionectomy. The authors[2, 3] of these techniques themselves indirectly condemn them when they discuss the disabling effects of these procedures. Methods of treating high blood pressure which make the patient faint when he stands, or cause his pulse to become more rapid when he stands or exerts or result in more fatigue on exertion than was experienced before the operation certainly should be considered advisedly. All such responses of the cardiovascular system are indications of more cardiac embarrassment, of greater strain on the heart and not of relief from the strain of hypertension. It is obvious that adequate treatment should relieve the hypertension when the patient is recumbent as well as when he is standing.

If, as Goldblatt says, the object in the surgical treatment of hypertension is to increase the blood supply to the kidneys, any operative procedure that in any way embarrasses this blood supply will defeat the desired result. In dogs, and to a lesser degree in man, there is an accessory blood supply to the kidneys by way of blood vessels to the capsule of the kidney. Any surgical exploration around them might very well interrupt this accessory circulation to kidneys in which the blood supply is already embarrassed and produce further renal ischemia sufficient to precipitate acute hypertensive or nephritis symptoms. An operative procedure in which this blood supply is not disturbed is highly desirable.

Goldblatt says that he hesitates to suggest decapsulation of the kidney followed by omentopexy as a procedure to increase the blood supply and relieve hypertension. There are those[4], however, who are applying this method with some degree of success. The danger of disturbing the auxiliary blood supply to the kidneys may be a valid argument against this method, but it should not be used to discredit it until the degree of disturbance has been studied more thoroughly.

SELECTION OF METHOD OF TREATMENT

The surgical method selected for the treatment of hypertension, should be designed to do the most with the least possible disabling or disfiguring of body structures and function. A method based on sound anatomical, physiological, and pathological reasoning is the most appropriate. The experimental work at hand indicated that the method should be aimed at producing an increased flow of blood through the kidneys. A complete sympathectomy of the kidneys should accomplish this with the greatest effect[5].

The kidney receives its sympathetic nerve supply from the lower eight thoracic segments by way of the splanchnic nerves and their efferent fibers. Many of these fibers run separately to the celiac plexus or to the sortic plexus, making their connections in this way with the renal plexus and with the kidney. Realizing the tremendous number of variations in the sympathetic nervous system, one can understand how impossible it is to completely denervate the kidney when operating below the diaphragm. It is frequently difficult to identify aberrant sympathetic fibers above the diaphragm even when it is possible to trace them from their source. Fibers may be seen to join the splanchnic nerves and then to leave them again to penetrate the diaphragm alone or to proceed separately to the aortic plexus.

From a technical standpoint, the method of choice should therefore be that performed above the diaphragm if it accomplishes reasonably beneficial results. The sympathectomy above the diaphragm is adequate; it is accompanied by no disabling sequalae except the occasional backache and is better adapted to these patients than any other operation so far proposed.

RESULTS OF SYMPATHECTOMY

Braden and Kahn[6] in an elaborate statistical study of the cases operated upon above the diaphragm by Peet show a reduction in blood pressure of at least 40 points in the systolic and 15 points in the distolic blood pressure in 43% of the cases. Also, they show an improvement in pathological eye ground in 81%; an improvement in pathological urinary concentrating ability in 45%; an improvement of impaired urea clearance in 45%; a decrease of 10% or more in heart size in 58% of the cases where the heart was found to be enlarged preoperatively; a 48% improvement of abnormal electrocardiograms; appreciable relief of distressing subjective incapacitation in 84% of the cases. Finally, in the 85 cases in which data were available, a normal blood pressure was shown to be maintained in all but five cases for periods ranging from 6 to 60 months.

Peet[7] in a more recent report says that 85% of all the patients on whom he was able to obtain data, postoperatively had relief of major symptoms. Headache was relieved most often. Capacity to carry on at work was improved 81%. A fall of at least 40 points in systolic and 15 points in diastolic blood pressure was observed in 51%, of which about one-half of these returned to a normal blood pressure.

Evidence of improvement in vision and in the appearance of the ocular fundi, of decreased heart size and lessened cardiac embarrassment and of improved renal function, especially in cases with abnormal urinary excretion, was apparent in 45 to 70% of the cases in which data were available.

Splanchnicectomy gave more favorable results in females under the age of 30 years. Beyond the age of thirty the results were about the same.

Advanced changes in the ocular fundi, even papilledema, did not contra-indicate the operation.

Finally, according to Peet, the effects of sympathectomy performed above the diaphragm so as not to include the abdominal chain are permanent and the results of this procedure are better than any other, either medical or surgical, thus far reported.

In conclusion, my experience has confirmed most of the facts presented in the above statistics. In particular, relief of headache is most marked, relief of other distressing symptoms is apparent, many severly affected optic fundi, even with papilledema, have been seen to improve and the swelling disappear. Finally, at least 50% of the patients postoperatively obtained satisfactory permanent improvement.

Metropolitan Bldg.

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Tuberculous Osteomyelitis of the Shafts of the Large Long Bones

W. COMPERE BASOM, M. D.
El Paso, Texas

TUBERCULOUS lesions of the shafts of the large long bones comprise a group of cases which are very difficult to differentiate from pyogenic osteomyelitis. The first lesion was described 100 years ago and probably was correctly diagnosed even though Koch did not discover the myco-bacterium tuberculosis until 1882. The literature on the subject has now become relatively voluminous and about 350 cases have been reported[2].

PATHOGENESIS

Lesions which arise in the joint or epiphysis and envolve the shaft of the bone secondarily will not be considered in this paper since that group of cases requires a different type of treatment. In this paper only lesions which originate primarily in the shaft or metaphysis will be considered. Shaft tuberculosis usually is secondary to some other tuberculous focus in the body. Trauma may have some effect on the localization of the infection, however this is open to question. There are some instances in which direct implantation might have been responsible for the infection, as there are two cases in the literature which resulted from bullet wounds[3]. Direct extension from a nearby tuberculous lesion may also cause shaft tuberculosis.

PATHOLOGY

Tuberculosis of bone is not always characterized by destruction of bone. Proliferation of bone may occur if compact cortical areas are involved[1]. It is the reaction of bone to the etiological agent rather than the specific type of invading organism present which determines the gross pathological picture.

Most lesions will show evidence of both proliferation and destruction of bone. A classification of the gross pathological picture is interesting and helpful from a standpoint of differential diagnosis and treatment. The following types may be noted:

Type 1 is a solitary tuberculosis abscess which is usually located in the metaphyseal area.

Type 2 is localized tuberculous osteomyelitis.

Type 3 is the diffuse type of tuberculous osteomyelitis.

Type 4 is tuberculous periostitis, which is characterized by the presence of rarefied laminated new bone in the periosteal layer over an apparently intact cortex.

Type 5 is tuberculous infections of fractures.

CLINICAL OBSERVATIONS

Clinically the diagnosis may be strongly suspected but cannot be established positively. The symptoms and signs vary with the extent and type of lesion. The variants may range from a mild chronic type of pain with slight tenderness and moderate swelling to a sub-acute onset with severe pain and marked swelling. Temperature that is elevated by a few degrees and a slight leucocytosis may be encountered. The presence of associated proved lesions as are present in a high percentage of the cases will aid greatly in establishing the correct diagnosis. Associated lesions may occur in the lungs, cervical on inguinal lymph nodes, in the sacro-iliac joint and other areas. If one of these lesions is present the diagnosis is more easily suspected. In the case of the local lesions, the tibia has been involved most frequently, the ulna and femur next in order[6]. Roentgenograms are helpful and of course should always be made, however, at times there are no observations which may be made clinically which suggest the possibility of shaft tuberculosis.

A tuberculous abscess may simulate closely a Brodies' abscess. The onset is insidious with no constitutional symptoms[8]. Occasionally attacks of dull aching pain may occur in the region of the lesion. The disease may tend to spread through the cortex later on. Tuberculosis periostitis is manifest by the presence of mild, chronic pain localized over the lesion. No general symptoms are present. There may be a history of injury. The lesion in the early stage may look like a soft tissue abscess or hematoma. In the extensive lesions of the shaft of the bone the onset is sub-acute. There may be severe pain and swelling of the entire portion of the envolved bone. Pain and tenderness may be marked during the first two weeks after which time a fluctuant swelling may be found in the soft tissues. The temperature may vary from

98.8 to 101.3 degrees Fahrenheit and in many instances constitutional symptoms may be present.

DIFFERENTIAL DIAGNOSIS

Certain clinical pictures may develop from different etiological agents. Bone may react in a similar manner to similar stimuli even though stimuli are produced by different etiological agents[10]. From the clinical picture alone it is difficult to establish with any certainty, the diagnosis of tuberculous osteomyelitis. Biopsy and guinea pig inoculations must be resorted to in most cases. The following conditions may be simulated by shaft tuberculosis.

BRODIES' ABSCESS

This is a well localized pyogenic abscess usually without external fistula or sequestrum which is located in the extremities of the long bones. It is not of tuberculous origin. It is not as close to the epiphyseal line usually as the tuberculous abscess. Pain, enlargement and periosteal thickening occur commonly. The tuberculous abscess is smaller and more strictly localized, with, as a rule, little thickening of the periosteum or bone. It has a tendency to early proliferation of the epiphyseal cartilage or to lateral rupture. Usually the wall of a tuberculous abscess is not as sclerotic as the wall of the pyogenic abscess.

BONE CYSTS

Bone cysts lack pain and tenderness. There is thinning of the bone. In a pyogenic abscess and occasionally a tuberculous abscess there may be enlargement of the bone.

PYOGENIC OSTEOMYELITIS

This is a difficult differential diagnostic condition. Usually the purely destructive lesion is tuberculous. In pyogenic osteomyelitis the sequestrum occurs relatively early in contrast to the late appearance in tuberculosis. The onset of tuberculous osteomyelitis is less acute. The pain is less severe. The febrile reaction less pronounced and the leucocyte count does not show as great an increase of polymorphonuclear neutrophiles. Not only may the roentgenograms resemble pyogenic osteomyelitis but the gross appearance of the lesion at operation may be confusing[5]. The biopsy may be the only means of diagnosing the condition.

SYPHILIS

In syphilitic periostitis or osteitis the serum reaction, the history and evidence of lues may help in the differential diagnosis from tuberculosis. The lesions are also more likely to be bilateral. Syphilis is supposed to be more formative than the other preceding conditions. Fundamentally there is a periosteal reaction causing gross thickening and change in the shape of the bone. Tenderness is only moderate. Local elevation of the temperature is not noted. There is no sinus formation. Syphilis is practically never associated with cavity formation according to Sorrel[13]. Roentgenologically syphilis is difficult to differentiate from shaft tuberculosis.

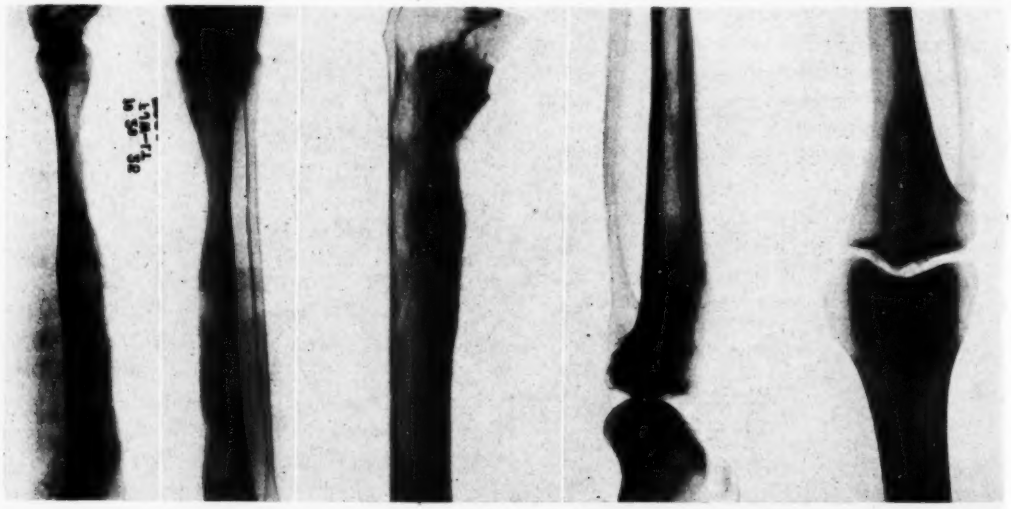

Fig. 1. (a) Clinically, this lesion seemed to be a Brodies' abscess. This is type 1: the solitary tuberculous abscess.
(b) Localized tuberculosis osteomyelitis: type 2: lower third of the right femur.
(c) Diffuse osteomyelitis of the entire shaft of the left tibia—type 3.

NEOPLASMS

Neoplasms such as Ewings' tumor and osteogenic sarcoma may simulate tuberculous osteomyelitis. However, the clinical and roentgenological findings change rapidly. In a case with a short history differentiation may be difficult. The pain is less severe. Tumor formation will be present with an irregular blurred outline in the roentgenogram. The destructive type of osteomyelitis may resemble metastatic carcinoma of bone.

CHRONIC SCLEROSING OSTEITIS

This condition is probably a low grade infectious process, it tends to involve the midportion rather than the end of the bone. Fever and luecytosis may occur often. There is a spindle shaped enlargement of the shaft with thickening of the cortex and narrowing of the medullary cavity. There is no suppuration. Cases of tuberculosis have been reported which clinically could not be differentiated from this lesion[9].

COCCIDIOIDAL GRANULOMA

This infection when it involves bone may closely resemble tuberculosis both clinically and pathologically. The clinical course is not constant. Fever is more or less irregular. The epiphyses and tubercules of the long bone are both frequently involved. Accurate differentiation cannot be done by roentgenogical examination alone. Microscopically the lesions resemble those of tuberculosis and can be distinguished only by the presence of the parasite.

PROGNOSIS

Apparently the prognosis as regards life is good in the majority of uncomplicated cases; that is, those without associated lesions. The local prognosis as regards the bone is good[7]. There is a strong tendency towards healing. Joint motion is not seriously interferred with. On the whole, the local prognosis is much better in shaft tuberculosis, than it is in joint tuberculosis. About 50% of the cases will recover. The mortality rate tends to be around 8% to 10%.

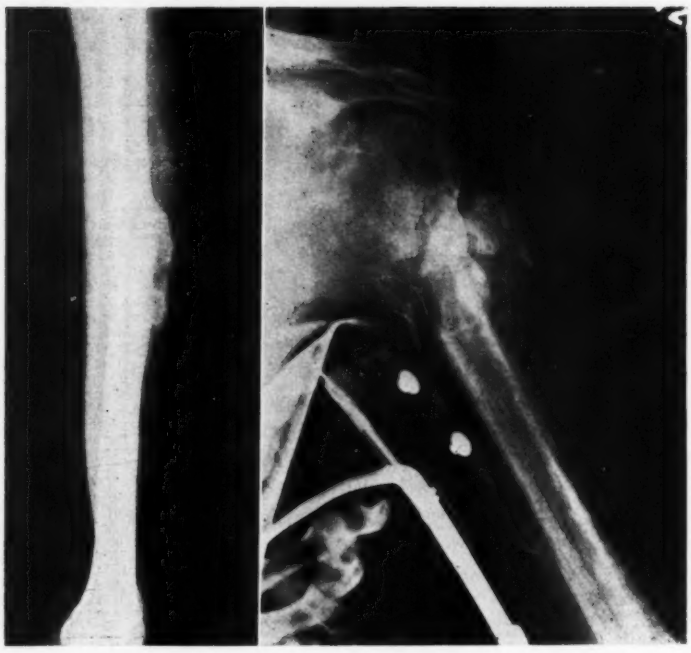

Fig. 2 (a) Boney tumor situated in the middle third of the left radius in the periosteal and soft tissue region. Tuberculosis periostitis—type 4.

(b) Ununited fracture of the neck of the left humerus with marked infection, caused by a bullet injury injury six months prior to the admission of the patient; the wound had failed to heal—type 5; tuberculous infection of fractures.

TREATMENT

General Therapy

General therapy consisting of fresh air, good hygenic surroundings, and a well balanced diet are all important as in the treatment of pulmonary tuberculosis. Rollier has confidentially stated that all cases of external or surgical tuberculosis, even the most severe, can be cured by heliotherapy. He believed that the condition is a general infection and that it must be combatted by all forces of the entire body[12]. General therapy is indicated in all cases.

Local Therapy

It is difficult to outline a procedure which would be correct for the treatment of the local lesion in all cases. This varies with each individual case. Apparently operation with exploration of sinus tracts, drainage of abscess cavities, removal of sequestra and diseased bone when practical is the procedure of choice. The wound may be closed when there is no secondary infection[4]. If secondary infection is present then the wound should be left open, packed with

vaseline gauze and the Orr treatment instituted[11].

CONCLUSIONS

Shaft tuberculosis may simulate pyogenic osteomyelitis, Brodies' abscess, certain types of neoplasms, chronic sclerosing osteitis, osseous syphilis, and coccidioidal granuloma.

Clinically shaft tuberculosis may be strongly suspected, however, positive diagnosis can only be established by microscopic examination or by certain laboratory procedures. Routine examination of all tissue removed during the operation of every case of bone infection is necessary in order to pick up some cases of shaft tuberculosis. Repeated examinations when practical, when indicated and deemed safe (repeated operations may cause generalized spread of the local lesion), may be necessary to establish a diagnosis in some cases. A positive culture for a pyogenic organism does not rule out the possibility of shaft tuberculosis.

General therapy for tuberculosis is all important in the treatment of every case. The treatment of the local lesion has been outlined.

Roberts-Banner Bldg.

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Clinical Problems in the Diagnosis and Treatment of Jaundice

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Chicago, Illinois

THE detection of jaundice, itself, presents no difficulty. A suspicion as to its presence is readily corroborated by the van den Bergh reaction which measures the amount of bilirubin in the blood and distinguishes between uncomplicated hemolytic and other types of icterus. The chief problems are concerned with the differentiation between jaundice due to obstruction which requires surgery and jaundice due to liver injury which needs medical treatment.

PHYSIOLOGIC CONSIDERATIONS

In the solution of problems relating to jaundice some knowledge of the physiology of the liver is indispensable. Although much remains to be clarified, physiologic investigation, experimental surgery and studies in the fields of hematology, nutrition and endocrinology have produced information which has a direct clinical application. The functions of the liver are concerned mainly with external secretion of bile, the manufacture of food materials and other substances, the storage of food materials, regulation of the composition and volume of the blood, and with detoxication. Glands of internal secretion exert their effect, particularly in the chemical control of carbohydrate metabolism, mainly within the liver.

The following characteristics and activities of the liver are of special interest:

1. Although undifferentiated histologically the parenchymal cells carry on functions remarkable in number, diversity and complexity. They work under low oxygen tension since about three-fourths of the hepatic blood supply is delivered by the portal vein.

2. Normal activities can be maintained by some 20 per cent of the usual liver bulk. The capacity for regeneration is so great under favorable conditions that, as stated by Ivy after experimental removal of 70 per cent of the liver as much as 90 per cent of regeneration may occur within a few weeks. Most important in creating favorable conditions is the administration of large amounts of glucose.

3. Complete removal of the liver experimentally is followed by hypoglycemia which is fatal within 18 hours unless glucose is given; even though hyperglycemia is maintained by the administration of glucose, death occurs within

Read before the meeting of the Southwestern Medical Association, El Paso, Texas, on November 21, 1941.

48 hours. The animal finally succumbs as a result of the loss of manifold activities and not because of a lack of a single function.

4. Absence of bile in the duodenum resulting from experimental bile fistula causes death after a few months, from nutritional disturbances. The oral administration of whole bile produces partial alleviation of symptoms. The bile salts serve as specific activators of pancreatic lipase and make possible the absorption of fats, carotene, the fat-soluble vitamins D and K, and probably E.

5. The liver cells are responsible for the maintenance of a relatively stable blood-sugar level. They form glucose from the more complex sugars, from the monosaccharides, galactose and fructose, and from certain amino-acids derived from protein. Glucose is converted into glycogen as is the lactic acid formed in muscular activity. Glycogen storage is promoted by insulin. The glycogen reserve is depleted by fasting and by various hepatotoxins; an ample store supports the detoxifying function of the liver and favors regeneration of liver cells.

6. In protein metabolism the liver cells change certain amino-acids into glucose when the supply or utilization of carbohydrate is inadequate. Urea is formed mainly in the liver after splitting of the combustible amino group. The administration of amino-acids orally or intravenously can effectively maintain nitrogen equilibrium.

7. The fat content of the liver is increased by pancreatic deficiency, by hepatotoxins and usually by fasting. Ketone bodies are formed chiefly, and perhaps solely, in the liver. More recent studies indicate that energy is normally derived from the oxidation both of fats and of carbohydrates and that ketogenesis is an expression of increased fat metabolism made necessary by a diminished supply or faulty utilization of carbohydrate.

8. An anti-pernicious anemia factor is stored in the liver as is most of the iron derived from food. In experimental anemia produced by bleeding, the feeding of liver substance accelerates the production of hemoglobin.

9. Vitamin A is formed in the liver from carotene, and stored there. The liver is rich in vitamin B and stores vitamins D and K, and probably E.

10. Fibrinogen and plasma protein appear to be formed in the liver. Prothrombin is evidently manufactured or activated here since hypoprothrombinemia is common when severe liver injury is present. Although low blood prothrombin levels accompany experimental vitamin K deficiency, failure of absorption of vitamin K. due to deficiency of bile salts in the duodenum, is more important clinically. A combination of liver damage and absence of bile is evidently of frequent occurrence.

LIVER FUNCTION TESTS

Since the liver is not known to possess a single vital function attention has necessarily been directed to the investigation of individual activities. Numerous tests concerning every measurable function have been proposed in the hope of discovering a group of tests which would permit an evaluation of liver function as effectively as do certain simple procedures in the study of gastric and renal disease. There are available measures of the effectiveness of excretory function, of the regulation of blood composition, of metabolic activity and of the capacity for detoxication as well as miscellaneous procedures. Many of them are occasionally useful but most have been discarded. That almost all of the tests proposed have serious limitations is, of course, not surprising in view of the margin of safety and the regenerative capacity of the liver. In the important task of differentiating between obstructive and toxic jaundice a further obstacle is due to the fact that the mechanism of jaundice may be complicated and include both mechanical obstruction of bile and hepato-cellular injury.

There has been a tendency to use a rather large number of tests in order to measure hepatic efficiency. This has been due to recognition of the fact that positive results were seldom to be expected unless injury to the liver were diffuse and severe; although some tests might be negative, others might reveal impairment of certain individual functions. After reviewing the most useful procedures Soffer, in 1935, concluded that to appraise the functional status of the liver it was desirable to test as many functions as possible. While this statement is true there are practical objections of which the most important are expense to the patient and confusion caused by difficulties in interpretation. More recently emphasis has been placed on the

use of a limited number of tests repeated at regular intervals in the same patient, and on the complementary use of a few tests that are usually positive in the presence of liver injury and negative in the presence of uncomplicated obstructive jaundice, and vice versa. Great as is the aid furnished by the laboratory, no tests can supplant the information derived from a painstaking clinical study of the patient. This includes, of course, a careful history particularly as regards pain, the use of drugs, and exposure to certain industrial hazards.

TYPES OF JAUNDICE

It must be admitted that no classification of jaundice is entirely satisfactory. This is due mainly to the fact that instead of a single mechanism, several modes of production may be involved. Nevertheless, a classification that lists the chief primary mechanisms and stimulates a search for the predominant one is clinically useful. Based on the van den Bergh reaction, two types of jaundice are recognized, "retention jaundice" caused by excessive blood destruction and "regurgitation jaundice" due either to liver injury or to obstruction of the large bile ducts from neoplasm or stone. Of more practical value is the following classification which recognizes three types of jaundice: hemolytic, occurring "before the liver"; hepatic, occurring "within the liver"; and obstructive, occurring "beyond the liver". Accurate differentiation is not always possible. In common duct obstruction of long standing associated liver cell injury is to be expected; with severe, primary hepato-cellular damage obstruction of capillaries and small bile ducts within the liver may occur.

TESTS OF PARTICULAR VALUE IN THE PRESENCE OF JAUNDICE

Only a few procedures give information that is decisive. Other measures are of aid in determining the mechanism of the jaundice and of value in prognosis and as a guide in treatment.

Serologic tests for syphilis are indispensable for syphilis may produce the clinical picture of acute hepatitis, chronic hepatitis (cirrhosis) or hepatic tumor. In syphilitic disease of the liver the Wassermann test is, fortunately, nearly always positive. Non-syphilitic liver disease may, of course, be present in patients with lues. False positive reactions may occur in non-syphilitic patients who have acute liver damage as in eclampsia; in such cases reactions are usually negative later when active liver injury has subsided.

Hyperbilirubinemia is measured by the *indirect van den Bergh* reaction. *A positive direct reaction* is obtained in jaundice produced both within and beyond the liver and rules out uncomplicated hemolytic jaundice. The *icterus index,* which merely measures the degree of yellowness of the serum, provides a rough estimate of the intensity of jaundice but has no quantitative relation to the indirect van den Bergh reaction. Repeated at intervals in the same patient these tests are obviously of value in indicating whether jaundice is stationary, decreasing or increasing.

The presence or absence of a flow of bile into the duodenum is easily detected by examination of the duodenal content. A rough estimate of the amount of bile excreted may also be obtained by testing the stools for urobilinogen with mercuric chloride. The information derived is important but seldom decisive. Clay-colored stools may be due either to mechanical obstruction or to severe liver injury. The most frequent cause of complete absence of biliary excretion is a neoplasm; tumors may, however, produce only partial obstruction. Quantitative tests for urobilinogen are obviously of greater value than qualitative tests but are usually impracticable.

Of liver function tests the following seem at the present time to be the most simple and satisfactory,—the galactose tolerance test, the hippuric acid test, and the cephalin flocculation test. Dye and bilirubin excretion tests are obviously useless in the presence of jaundice. The *galactose tolerance test* is based on the principle that, in the presence of hepato-cellular injury the transformation of galactose into glucose is delayed or incomplete. Forty (40) grams of galactose and water are given in the fasting state, the urine is examined for sugar every hour for five hours and the total excretion determined. In diabetic patients glucose must be removed by rapid fermentation with yeast. Total excretion of more than 3 grams of sugar denotes severe, diffuse liver damage. The test is of limited value because it is usually negative in mild or subacute hepatitis. The *hippuric acid test* proposed by Quick is based on the ability of the

liver to convert benzoic acid into hippuric acid by conjugation with amino-acetic acid. Six (6) grams of benzoic acid are given by mouth in the fasting state and the urine collected every hour for four hours, when the total amount of hippuric acid excreted is chemically determined. Normally at least 3 grams of hippuric acid, calculated as benzoic acid, are excreted. Excretion of less than 2 grams is ascribed to liver damage provided renal disease and gastric retention have been ruled out. The intravenous test using 1.77 grams of sodium benzoate dissolved in 20 c.c. of water, has the advantage of requiring only one collection of urine at the end of one hour. Normally one gram (or 0.7 gram of hippuric acid equivalent of benzoic acid) is excreted. The *cephalin-cholesterol flocculation reaction,* which depends on specific properties of certain cephalins, was proposed by Hanger in 1938. Although the mechanism is not clear it has been suggested that an altered constituent of globulin becomes attached to the surface of cephalin-cholesterol particles. The colloidal suspension is added to the patient's serum and after 24 and 48 hours the degree of flocculation and precipitation of lipids in the test tube is noted. Normally and in the absence of liver injury no flocculation occurs. In acute hepatitis a strongly positive reaction appears in 24 hours and becomes negative as the condition subsides. In portal cirrhosis the reaction is usually posiive. In obstructive jaundice, however, the reaction is usually negative or only slightly positive in 24 hours; a more strongly positive test may be obtained if the sheep-brain cephalin has not been aged by exposure to air before the addition of cholesterol. Several reports that have appeared indicate that this is a sensitive measure of active liver disease. In a small series of patients under my observation the cephalin flocculation test has proved the most useful single test of intrahepatic disease.

In *obstructive jaundice,* two tests—the serum phosphatase level and the blood cholesterol value—are of particular interest. The *phosphatase of the serum* is believed to be formed chiefly in the bones from which it passes into the blood and then into the liver where it is excreted in the bile. When the bile ducts are blocked a marked accumulation of phosphatase occurs in the serum. In hepatitis there is sometimes a slight, and more rarely, a moderate increase; a marked elevation would seem to be due to an associated obstructive factor within the liver According to the Bodansky method, the serum phosphatase normally seldom exceeds 6 units in adults and 15 units in children. The *blood cholesterol,* normally 150-220 mg. per cent, is usually markedly increased in obstructive jaundice and particulary when carcinoma is the cause, unless complicated by severe infection. The cause of the hypercholesterolemia is not clear. In acute hepatitis the blood cholesterol is usually normal or subnormal.

The complementary use of the cephalin flocculation test (usually positive in acute hepatitis and negative in obstrucive jaundice) and the serum phosphatase determination (usualy increased in obstructive jaundice and normal in acute hepatitis) has been suggested by Gutman and Hanger as a routine procedure. This may seem an over-simplification but since some simplification is certainly desirable, this procedure merits a trial in a large series of cases.

Detection of a tendency to bleed, common in jaundice, is clearly important, particularly if surgery is contemplated, for trauma supples a factor that favors hemorrhage. Among other factors that influence vascular permeability are general infections, bacterial toxins, vitamin deficiencies, and specific vasculo-toxic substances. Ivy's test of *"venostasis bleeding time"* provides a simple method of discovering whether the patient actually bleeds. *Coagulation time* may be easily determined by the Lee and White method. *Capillary fragility* can be detected by the Rumpel-Leeds sign but petechiae may be more accurately counted by means of a special method of producing localized negative pressure. Determination of the *blood ascorbic acid level* permits the detection of vitamin C deficiency which predisposes to bleeding and to non-healing of wounds. Another important but perhaps somewhat over-emphasized factor in the bleeding tendency is the *prothrombin level of the blood* which can be measured indirectly. In patients with jaundice the usual causes of hypoprothrombinemia are lack of absorption of vitamin K due to a deficiency of bile salts in the duodenum, and parenchymatous liver damage. Vitamin K and bile salts or synthetic substances having the action of vitamin K increase the blood prothrombin level unless this is prevented by liver injury. It is of interest that a level as

low as 20 per cent of normal seems sufficient to prevent hemorrhage and of equal interest that hemorrhage may occur when the prothrombin level is normal. The latter observation emphasizes that hemorrhage is not due to a single mechanism.

Cholecystography often gives useful information. Non-visualization of a gaall-bladder that is normal may, of course, be due to common duct obstruction or to severe liver injury. However, in many cases of mild jaundice the gall-bladder can be visualized; in such event information that the gall-bladder is normal is reassuring and connotes, as well, the presence of fairly efficient liver function. The gastrointestinal x-ray study may be necessary to rule out a gastric or bowel lesion is, of course, recognized.

SPECIAL PROBLEMS

The most important questions to be solved are concerned with (1) the determination of the primary mechanism involved; (2) the recognition, as soon as possible, of factors that require surgical relief; (3) a decision, in cases of doubtful or complicated mechanism, as to the desirability of an exploratory operation; (4) a decision as to the optimal time for operation in both of the preceding groups of surgical patients; (5) the detection of a predisposition to hemorrhage; and (6) the use in medical management of measures that protect the liver and favor regeneration.

Jaundice due to blocking beyond the liver obviously requires surgical relief. The question of how soon the operation should be performed presents no special difficulty, at least in theory. The decision depends on the duration of jaundice before the patient has been seen, on the clinical course from this time, and on an estimate as to whether previous ill-health and the more recent effects associated with jaundice demand a period of preparation in order to lessen the risks of surgery. In any event, preparation for at least a week is almost always advisable, and if there is no contra-indication a longer delay may be desirable. An exception to this rule is gall-stone colic followed by obstruction from a calculus, in a patient recently without symptoms but known to have gall-stones. A prolonged delay is usually due to uncertainty as to diagnosis.

Detection of the primary mechanism is usually not difficult if the patient is seen early. However, differentiation between acute hepatitis and obstructive jaundice may even then be difficult or even impossible. In cases of undiagnosed, recent intense jaundice there is considerable variation in practice as to the optimal time for exploration. The surgeon is perhaps inclined to favor exploration too early, while the internist, aware of the occasional case of hepatitis that shows improvement only after several months, is apt to wait too long before advising operation. A period of observation of one to two weeks is much too short to rule out most cases of acute liver injury in which surgical interference willbe of no avail and may, indeed, be harmful. Bloomfield, on the basis of statistics on the duration of jaundice from the onset to the beginning of resolution, concludes that a period of observation of at least a month is necessary to rule out hepatitis. On the other hand, in many instances the delay in exploratory operation is unnecessarily long. The progress of jaundice is easily checked by appropriate tests, as is the presence or absence of bile flow into the duodenum. There is seldom an excuse for waiting more than six weeks from the onset of jaundice, particularly if, during the period of observation, measures have been carried out to support the liver and prepare the patient for possible surgical treatment.

Medical treatment, of particular importance in cases of jaundice originating within the liver, consists essentially of the administration of sufficient carbohydrate, largely glucose, to prevent if possible, further hepato-cellular damage and to favor regeneration, together with the supply of various accessory food factors of which the patient has been depleted. That further exposure to possible hepato-toxins such as cinchophen, neoarsphenamin and sulfonamid preparations, be avoided is self-evident. The value of vitamin C concentrates has been demonstrated. Vitamin C is indicated when the blood ascorbic acid level is low and vitamin K when hypoprothrombinemia exists. The diet is clearly important. The patient should receive 400 to 500 grams of carbohydrate daily. In acute hepatitis this amount can seldom be taken by the oral route even with the help of supplementary feedings of glucose in fruit-juice, candy or syrup. Glucose must, therefore, almost always be given intravenously in concentrations of 10, 20, or even 50 per cent in order to pro-

vide the necessary amount of sugar. In severe acute hepatitis, or when the patient is unable to take food, glucose and fluids are the only urgent requirements. Later an effort should be made to provide sufficient protein to keep the patient in nitrogen equilibrium. The diet prescribed should be very low in fat content but it is not necessary to insist on a fat-free diet. The protein allowance should be limited to about 40 grams.

In *portal cirrhosis* great benefit may be derived from the use of glucose, vitamin B concentrates, and vitamin C. Ascites may disappear spontaneously under such treatment. Diuretic management is also of value and may obviate the necessity of paracentesis and prevent the recurrence of ascites. By means of a low salt diet, ammonium chloride, and intravenous injections of mercurial diuretics, one patient loses 40 pounds of fluid and lived a year without any recurrence of fluid. Another patient, now under observation, has lost 30 pounds of fluid on medical management.

CASE REPORT

Case 1. Mr. G., age 73 years. Jaundice and pruritis had been present for one week. Mild didabetes had been recognized 18 months previously. Stools were clay-colored and contained no urobilinogen. The urine was bile-stained. The icterus index measured 85 units, blood cholesterol 249 mg. per cent, and blood prothrombin level 58 per cent of normal. Roentgen examination showed stomach, duodenum and colon to be normal.

After seven days the stool still contained no urobilinogen and the prothrombin level had dropped to 40 per cent of normal despite the use of vitamin K and bile salts. The patient was obviously losing ground. Fluids had been administered and insulin used . A laparotomy was performed by Dr. H. M. Richter after 15 days of jaundice; carcinoma of the head of the pancreas was found and a cholecystogastrostomy was done. Postoperative recovery was rapid and without incident. The patient lived in comfort for three months.

This case presented no particular problem. The diagnosis seemed clear. A palliative operation was indicated after only a brief period of preparation.

Case 2. Miss M., age 25. This patient for four years had had recurrent attacks of pain, vomiting, fever and jaundice. The stools at all times contained urobilinogen. The first attack occurred when she was a student nurse and led to an appendectomy. A second attack occurred 10 months later and thereafter she was never entirely free of jaundice. uring D1939 she had six attacks. The pain was usually in the right upper quadrant and was sometimes referred to the back and shoulders. On one occasion she had a chill. Leukocytosis was never observed. In an interval between attacks the icterus index was 22 units; a positive delayed direct van den Bergh reaction was obtained; stools contained urobilinogen; galactose tolerance and bromsulphalein tests were negative. Cholecystography revealed a normal gall-bladder and gastrointestinal x-ray studies were negative. The spleen was not enlarged and the red blood cells were normally resistant to hypotonic salt solution.

An exploratory laparotomy in February, 1940 revealed no pathology. Three attacks occurred in January and February, 1941, the icterus index ranging between 15 and 45 units. Cholecystography and gastrointestinal x-ray studies were again negative. Various serologic tests were negative, as were skin tests for tuberculosis and undulant fever. Another laparotomy was performed by Dr. H. M. Richter in March, 1941, and again no gross pathology was noted. Cholangiography was negative. Biopsy of the livevr, however, showed numerous scattered small focal abscesses of the average size of three liver cells and composed mainly of groups of polymorphonuclear leukocytes with occasional eosinophiles. The biliary tree was comparatively free of inflammatory cells but the branches of the portal vein and the central veins were surrounded by and contained numerous polymorphonuclear leukocytes. The pathologic diagnosis was acute diffuse hepatitis, evidently originating in the branches of the portal vein.

Six months after the laparotomy the patient feels well enough to resume her duties as a nurse, but her sclerae are icteric and the icterus index is elevated. A cephalin flocculation test performed for the first time was strongly positive in 24 hours.

This patient has a chronic hepatitis with acute exacerbations, apparently infectious but of unknown etiology. She has been subjected to three laparotomies although at no time were there any suggestions of obstructive jaundice. The liver function tests performed were negative until recently when a positive flocculation test was obtained. The usual treatment designed to protect the liver by means of glucose and vitamin concentrates, and the administration of whole bile salt preparations have been of no benefit.

Case 3. Miss L., age 23. This patient was admitted to the hospital in April, 1941, with jaundice, glycosuria and a discharging sinus at the site of a recent appendectomy. Headache, nausea, and vomiting began in January and were ascribed by the patient to fumes inhaled in the factory where she was employed. Slight jaundice was noted on February first, and two

weeks later an appendectomy was performed. Glycosuria was then noted and jaundice increased. Ten days after the operation the wound opened and had to be resutured.

The following table shows the results of various laboratory tests performed, in some instances, at weekly intervals:

Direct van den Bergh reaction—positive.
Indirect van den Bergh reaction—20, 18, 12, 12, 8.
Stool urobilinogen—present in all specimens.
Hippuric acid excretion—normal.
Galactose tolerance—normal.
Blood phosphatase—5.3, 5.4.
Blood cholesterol—220; esters 60 per cent.
Blood prothrombin level—54, 26, 25, 22 per cent of normal.
Cholecystography—normal gall-bladder.

Of decisive importance in diagnosis were positive Wassermann and Kahn tests on three occasions. The jaundice was definite but never very marked. Despite the use of glucose, calcium and vitamin K the prothrombin blood level decreased progressively, and in this instance suggested progressive liver injury. Anti-syphilitic treatment was begun with potassium iodide and, later, small doses of bismuth were injected. After six weeks of hospital care, the general condition of this patient had definitely improved; the only indication of progressive liver injury was the reduction in blood prothrombin level and a slight residual jaundice.

Case 4. Mr. C., a liquor salesman, age 51, was admitted to the service of Dr. H. B. Carroll on September 4, 1940, because of painless jaundice of seven weeks duration. The patient was afebrile and had lost 28 pounds in weight. The liver was palpable and tender. Glycosuria and hyperglycemia were present. During three weeks of observation many laboratory procedures were carried out. Most revealing were positive direct van den Bergh reactions and hyperbilirubinemia of 18, 23, and 23 mg. per 100 c.c. of blood; icterus index values of 120, 135 and 120 units; the absence of bile in the duodenum on admission, and the subsequent absence, or the presence of only a trace of urobilinogen in the stools; a blood phosphatase level of 23 units; blood cholesterol elevation to 770 and 704 mg.; and a blood prothrombin level 14 per cent of normal, increased by therapeutic measures to 20 and finally to 25 per cent of normal. The laboratory findings corroborated the clinical impression of obstructive jaundice.

A laparotomy was performed in the eleventh week of jaundice by Dr. J. A. Wolfer. The gall-bladder was distended and the common duct greatly dilated. A firm, but not hard, mass about two inches in diameter was palpated in the head of the pancreas; this mass merged with the body of the pancreas which was of the same consistency. The common duct was opened; dark bile, and some white bile were evaluated but no stones were present. A probe was passed down to but not beyond the mass in the pancreas. Chronic pancreatitis was diagnosed. The gall-bladder was anastomosed to the duodenum. Following the operation the van den Bergh reaction showed a reduction in serum bilirubin to 12 mg. in two weeks and to 7 mg. after three weeks; the icterus index fell to 80, 47 and 35 units. The blood phosphatase level decreased to 17 and then to 6 units and the blood cholesterol to 560 units. The blood prothrombin level increased to 31, and later, to 50 per cent of normal. The jaundice disappeared slowly and on diabetic management the patient gained weight and strength.

About six months after the operation severe abdominal and back pains appeared and control of the diabetes became difficult. The patient became progressively worse and died in June, 1941. At necropsy extensive metastases were found in the liver, and other metastases were present in the neighboring glands, the lungs and kidneys. Sections showed pancreatic duct carcinoma.

In this patient clinical observation and laboratory studies were not possible until seven weeks after the onset of jaundice. The observation period of 23 days, during which large amounts of glucose, bile salts, vitamin K, and other vitamin concentrates were administered, was probably longer than necessary Cholecystoduodenostomy was performed without postoperative complication and was followed by complete disappearance of the jaundice

Case 5. Mrs. F., age 47 (service of Dr. H. B. Carroll). Painless jaundice and severe pruritis had been present for five weeks before admission to the hospital. The liver was definitely enlarged and the spleen was just palpable.

During three weeks of observation the following pertinent information was gained from laboratory studies: the icterus index ranged from 100 to 120 units; duodenal drainage on admission revealed no bile and subsequent stool examinations showed only a trace of urobilinogen; the urine contained bile pigment; serum phosphatase measured 31 and 37 units, and the blood cholesterol 645 and 568 mg. per 100 c.c. The blood prothrombin level was 17 per cent of normal and after the administration of vitamin K preparations and bile salts, increased to 25 and then to 95 per cent of normal. The blood ascorbic acid level was normal on admission. Cholecystography resulted in non-visualization of the gall-bladder; a barium meal showed normal stomach and duodenum.

Operation was performed by Dr. J. A. Wolfer on June 24, 1941, in the ninth week of jaundice after three weeks of observation and preparation. The liver was markedly enlarged, the gall-bladder normal, the large ducts patent. The right lobe of the liver showed a depressed scar 3 cm. in diameter. A hard mass was palpable above and adjacent to the right border of the gall-bladder and in the hilus where the ducts emerged from the liver. No other pathology was

noted. Sections from the scar of the right lobe and from the under surface of the liver showed extensive replacement of parenchyma by fibrous scar tissue, swollen liver cords, compressed sinusoids and enormous dilatation of bile ducts, interpreted as "obstructive biliary cirrhosis". The gall-bladder was drained but during the first week after operation drainage averaged only 30 c.c., and during the second and third weeks, 60 and 120 c.c. respectively. On discharge from the hospital drainage had ceased and no improvement had been effected. Three months after operation the patient's condition was unchanged.

This patient evidently had obstructive jaundice due to blocking just outside of the liver. Although the sections removed showed no carcinoma it must be assumed that a malignant tumor is the cause of the obstruction. Chiefly illustrated is the remarkable rise in the prothrombin level of the blood after appropriate treatment, and the decreased operative risk after careful preparation.

Case 6. Mrs. A., age 47 years. This patient came to the hospital for the study of her jaundice because of conflicting advice as to treatment. Some physicians had advised exploratory laparotomy and others had expressed the opinion that no benefit could be derived from surgery. A very annoying pruritis had appeared 15 months previously and shortly thereafter icteric sclerae were observed. In October, 1940 a prompt direct van den Bergh reaction was found; icterus index was 32; urobilinogen was present in the stools; a serum phosphatase level of 13 and a blood cholesterol of 317 were reported. Cholecystography revealed a normal gall-bladder and splenic enlargement was not observed. Surgery was advised. In January, 1941 other physicians noted bilirubinemia of 3.8 mg. per 100 c.c. of blood, an icterus index of 26 units, the presence of bile in the duodenal content, enlarged liver and spleen. They diagnosed biliary cirrhosis and advised against an operation.

On admission to the hospital in April, 1941 pruritis was intense, the skin showed diffuse pigmentation ascribed to melanin, and both liver and spleen were easily palpable. The van den Bergh test showed a positive direct reaction and a quantitative bilirubinemia of 2.7 mg. The icterus index was 40 units. The stools were brown and contained urobilinogen. The urine contained no bile. A galactose tolerance test was normal; the serum phosphatase level was 19 units and the blood cholesterol 406. Prothrombin blood level was 95 per cent of normal. The tests used showed no obstruction to the flow of bile into the duodenum, but suggested an obstructive mechanism.

In September, 1941, despite efforts to follow a high carbohydrate diet and the use of chondroitin and vitamin B concentrates, the patient had lost weight. Jaundice was more intense, with 9.1 mg. bilirubin in the blood and an icterus index of 80 units. A cephalin flocculation reaction was strongly positive in 24 hours, providing evidence, at last, of parenchymatous damage known to exist. An intravenous hippuric acid test showed excretion of 0.78 gm. (78 per cent of normal. The blood cholesterol had increased to the very high value of 1960 and the serum phosphatase to 85 units.

This patient evidently has a biliary cirrhosis of unknown etiology. The gall-bladder is apparently normal. Since there is no obstruction to the passage of bile into the duodenum it is difficult to envision any good results from surgery. A positive cephalin flocculation test, and less conclusively, a hippuric acid test, indicate parenchymatous injury. The marked increase in serum phosphatase and blood cholesterol levels suggests obstructive jaundice, and we must conclude that the obstructive factor is within the liver, itself. Nothing has been found to relieve the pruritis and the prognosis is evidently poor.

Case 7. Mrs. M., age 44 years, was admitted to the service of Doctor Carroll in June, 1941, with mild jaundice of one month's duration. Liver enlargement had been noted 18 months previously, at which time gastrointestinal x-ray studies were reported to be negative. The patient stated that slight fever of unknown cause had been present at intervals since early adult life. Her appetite had been poor for years. She had been accustomed to taking alcohol before and after dinner. Undernutrition was evident and a slight fever, sedimentation rate of 56 mm., and marked secondary anemia were present. The smooth liver extended to the navel; the spleen was not definitely palpable; no ascites detected. The icterus index averaged 60 units during three weeks of observation. Stools contained urobilinogen. Of liver function tests, galactose tolerance was normal but a positive cephalin flocculation was obtained. The serum phosphatase level was normal. The blood prothrombin level was 26 per cent of normal. Three months later ascites was apparent and a paracentesis was performed.

This patient evidently has a portal cirrhosis with superimposed jaundice. Chronic infection of unknown origin, dietary deficiency and alcohol are evidently etiologic factors. An explanatory operation, which had previously been advised, would be of interest mainly in ruling out carcinoma. The prognosis seems poor.

Case 8. Mr. L., age 51 years. This patient was brought to the hospital in July, 1941 with a hemorrhage, having just vomited blood and passed blood in his stools. He had been in robust health until a year previously when he had abdominal symptoms ascribed to gall-bladder

disease on the basis of a positive shadow in this region and non-visualization of the gall-bladder by cholecystography. The prior use of alcohol was admitted. Three blood transfusions were given. A barium meal and enema revealed no pathology. Ascites, which had been overlooked on admission, became marked. The icterus index measured 10 units. Bromsulphalein retention of 40 per cent was observed, a galactose tolerance test was positive (5.3 gm. excreted), and a cephalin flocculation reaction was positive in 24 hours. Total serum protein, serum phosphatase level, and blood cholesterol were normal. The blood prothrombin level and blood ascorbic acid levels were low.

A high carbohydrate diet was used and in this case small amounts of insulin were given. Vitamin B concentrates and vitamin C were administered. Sodium chloride was withheld and ammonium chloride, gm. 4 daily, administered. Four intravenous injections of mercupurin, 0.5 to 1.0 c.c., were given during a period of ten days. As the result of diuresis the patient lost 21 pounds in weight, from 186 to 165 pounds, between August 15th and 25th. After the ascites disappeared, splenomegaly was noted but the liver was not palpable. A month later the ascites was still absent, the spleen had decreased in size, and the patient had gained in weight and strength.

This patient evidently had a decompensated portal cirrhosis. Liver function tests indicate active liver damage without jaundice. The clinical course to date illustrates the effectiveness of medical management. Insufficient time has elapsed to warrant a conclusion as to whether further improvement will permit this patient to resume his former occupation.

CONCLUSION

Management of patients with jaundice requires as a background, familiarity with the physiology of the liver and of the biliary tract. In the frequently difficult differentiation between jaundice originating within the liver and jaundice produced by mechanical obstruction, the most important points to be determined are the degree and course of the bilirubinemia, the presence or absence of the flow of bile into the duodenum, the presence or absence of evidence denoting active liver injury, the presence or absence of findings that clearly suggest an obstructive mechanism, and the existence of a tendency to bleed. The answer to these questions is greatly aided by appropriate laboratory tests. Effective clinical use of such measures requires recognition of their limitations and a simplification of procedure with emphasis on fewer, selected tests performed more frequently on the same patient.

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Acute Lymphatic Leukemia

(Precipitation by Severe Hemorrhage)

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THE first case of Leukemia was recorded by Hughes Bennett[1] in 1845. He described the case as a suppuration of the blood with enlargement of the liver and spleen, and called the disease *Leucocythemia*. The same year Virchow[2] reported a similar case and gave it the name of *Leukemia*. However, not until 8 years later (1853) was the distinction made by Virchow[3] between splenic and lymphatic leukemia. In 1891 Ehrlech began his blood staining, and at this time division between myelogenous and lymphatic types was made.

Ordway and Gorham[4] found that leukemia occurs in between one and three cases per thousand hospital admissions. Of 6000 autopsies performed at Cooke County Hospital, Chicago, 58 of these had leukemia. Kracke[5], in his text *Disease Of The Blood*, give 14 classifications for types of leukemia. The main three divisions, however, are myelogenous, lymphatic

and monocytic leukemia. Any of these types may be acute or chronic, and may have aleukemic phases. Chronic lymphatic leukemia accounts for 20% of all leukemias. Rosenthal and Harris[6] made a study of 455 cases, and of these 38% were acute; of this 38%, 30% were myelogenous, and 7% were lymphatic.

Search of the literature reveals that the etiology of leukemia is as obscured now as it was in 1845. There is much evidence in favor of leukemia being neoplastic in nature. However, there is no agreement on this point. Heredity, sex, race, trauma, mental and physical strains are given as predisposing causes[7]. Males usually predominate three to one in all types of leukemia. Osler mentions that leukemia is often preceded by trauma. Yacuda and Rosenthal[8] reported three cases following trauma; one of these was struck on the shin by a shovel and twelve days later developed an acute myelogenous leukemia. The second case had a heavy object fall on his foot and ankle, and six weeks later developed an acute lymphatic leukemia. The third case fell and injured his hip with a fracture of the femur. Two weeks later he was found to have an aleupekic myelogenous leukemia. They also pointed out that Lutham in 1930 had collected 40 cases of leukemia in which trauma had preceded the development of the blood picture. In two cases recorded here, trauma followed by severe hemorrhage seemed to bring out the latent leukemia. The first case was probably a low grade lymphatic type which was precipitated into an acute phase by the strain thrown on the reticulo-endothelial system from severe blood loss. The second case began as an acute lymphatic type following severe blood loss from trauma.

The symptoms of leukemia may begin with asthenia, dyspnoea, rheumatoid pains, hemorrhages from the mucous membranes, abdominal pains and neuropathic complaints[9]. Physical signs soon are apparent, such as lymphatic gland enlargement, anemia, enlargement of the liver and spleen, fever, toxemia and stomatitis with oozing from the gum margin. One case has been seen which started as a gangrene of the entire uvula

Diagnosis may be made by the above symptoms and physical signs; but usually the classification of a type of leukemia can only be made by blood study. Diagnosis of leukemia from the blood, according to Kracke[10], may be put under four headings—1st, ANEMIA; 2nd, REDUCED BLOOD PLATELETS, usually under 50,000; 3rd, INCREASE IN THE WHITE BLOOD COUNT, usually between 50,000 and 100,00; 4th, INCREASE IN THE NUMBER OF LEUKOBLASTS, either lymphatic, myelogenous or monocytic.

Prognosis in leukemia is always the same—100% fatal. There is no evidence that any proven case has ever recovered. The acute cases usually go very rapidly, with toxic symptoms and progressive decline. The best prognosis is probably in the chronic lymphatic types, which may go on sometimes for a period of 5 to 6 years

Roentgen-Ray[11] therapy was first used for leukemia in 1901 by Pusey[12], following its discovery by Roentgen in 1895. The Curies discovered radium in 1898 and it was used for leukemia in 1914 by Renon, Degrais and others in France.

Other therapeutic methods used have been blood transfusions, fever therapy, Benzol medication, foreign protein injections, spleenectomy, and others—all to no avail. X-ray therapy over the spleen and enlarged glands and repeated blood transfusions are probably the only measures of real value.

CASE REPORTS

H. A. H. Male, aged 70, was brought to the office 3-12-38 with severe bleeding from a laceration on the right cheek and from the right nostril. The patient had been perfectly well until one hour previously when he was walking along and was hit by a rock from a blast. The rock was reported to be about the size of a man's fist. He was knocked down but not unconscious.

Examination revealed a deep laceration 9 cm. long, extending horizontally across the right cheek down to the maxillary bone. The laceration was still actively bleeding. A piece of packing in the right nostril had controlled a severe nasal hemorrhage to some extent. The laceration was cleansed with soap and water and tincture metaphen, bleeding controlled with ligation and the wound approximated wtih 4 skin sutures The nasal packing was removed and clean packing placed in the right nostrol. It was apparent that the intranasal hemorrhage was coming out of the ostium of the right antrum. Physical examination was otherwise negative except for shock from hemorrhage. Since he had traveled 40 miles and been bleeding actively for an hour he had lost considerable blood. He was not only bleeding from the soft tissues of the face, but a fracture into the outer orifice of the

right maxillary sinus had caused an intramaxillary sinus hemorrhage

An anterior-posterior picture of the sinus showed a fracture of the right maxilla with homogenous clouding of the right antrum and maxillary region. He was hospitalized for observation and treatment for shock.

3-13-38 (next day) — Urinalysis and Kahn negative.

R. BB. C. 3,100.000
Hemoglobin 62%
W. B. C. 2.950
Polys 35%
Lymph. 60%
Monos. 4%
Baso. 1%

The only abnormality was that there were many young lyphocytes counted among the 60% lymphocytes.

On the patient's insistence he was allowed to return home after being in the hospital two days. His condition was good, although he was, of course, weak.

He returned to the office one week later. He looked very weak and toxic so was re-admitted to the hospital. The right antrum was irritated and some blood clots obtained—no pus. Blood count R. B. C. 3,540,000, hemoglobin 72%, W. B. C. 29,700, with a large proportion of immature lymphocytes. It was apparent now that he was developing a lymphatic leukemia.

3-31-38 Blood picture 3,280,000, 88,000 whites composed of young lymphocytes.

4-4-38—98,000 W. B C.—98% lymphocytes.

4-8-38—97,000 W. B. C.—93% lymphocytes.

4-11-38—101,000 W. B. C.—R. B. C. 3,840,000 —72%

4-13-38—172,000 W. B. C.—R. B. C. 3,360,000 —70%

4-14-38—Patient became gradually worse and died.

CASE II

N. H., age 12, male, was brought to the office 5-27-41 with an epistaxis from the left side of the nasal septum. The mother stated that he was struck on the nose while playing at school and had had several severe nose bleeds during the past 48 hours. Otherwise the boy had apparently been in good health. The erosion of the septum was touched with a chromic acid bead, which controlled the bleeding. The boy returned two days later (5-29-41) stating that he had had no further trouble until this day, when he began to bleed again. The bleeding was again controlled by cauterizing with chromic acid. He looked at this time toxic out of proportion to the blood loss. He was referred for general check-up, which revealed a beginning enlargement of the liver and spleen.

R. B. C. 2,940.000
Hemoglobin 68% gms.
W. B. C. 33,400
Neutro. 5
Lym. 22
Eosin. 2
Lymphoblasts 68
Meylocytes 2

He was admitted to the hospital—

5-30-41—W. B. C. 21,250 64% lymphos.
5-31-41—W. B. C. 19.750 54% lymphos.
6- 1-41—W. B. C. 20.250 71% lymphos.
6- 2-41—W. B. C. 13,100 80% lymphos.
6- 3-41—W. B. C. 10,250 71% lymphos.
6- 4-41—W. B. C. 8.100 79% lymphos.
6- 5-41—W. B. C. 3.100 82% lymphos.
6- 6-41—W. B. C. 4.000 81% lymphos.
6- 7-41—W. B. C. 4.050 88% lymphos.
6- 8-41—W. B. C. 5,900 49% lymphos.
6- 9-41—W. B. C. 11,550 45% lymphos.
6-10-41—W. B. C. 20.400 52% lymphos.
R. B. C. 3,470,000
Hemoglobin 70%

During this period in the hospital the boy continued to have epistaxis from both nostrils, which was very hard to control. Bleeding would continue through the packing. He was given six transfusions, Vitamin K, and crude liver by injection. He was also taking calcium and ceanothyn, and any other medication that we could think of to increase blood clotting He received Congo Red and oxalic acid intravenously during the nosebleeds Radiation over the spleen was employed.

6-8-41. The temperature which he had been running subsided, the nosebleeds stopped and he was feeling improved. On account of his financial circumstances he was allowed to leave the hospital.

6-11-41. He remained in bed at home and continued about the same for five days, when he began to have a return of the nosebleeds, with bleeding from the gums. Blood count at this time (6-16-41) revealed 77,375 W. B. C., 83% lymphoblasts, 10 lym. eosin. 1, neutro. 6, R. B. C. 3,440,000. He now went rapidly downhill, with epistaxis, oozing from the gums and an occasional emesis of blood. The spleen was now so large that it was painful and it was necessary to keep him under narcosis.

6-23-41. He gradually lapsed into a coma and passed away.

SUMMARY

Two cases of acute lymphatic leukemia are reported. Severe hemorrhage following trauma seemed to have been the predisposing factor in these cases.

Thomas-Davis Clinic.

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Cyclopropane - A Safe Anesthetic Agent

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THE following remarks reflect solely the conclusions arrived at by one individual, which conclusions may be, and probably are, subject to marked contradiction and difference of opinion. However, these conclusions are based on a study of recent literature and a personal experience of over three thousand Cyclopropane administrations.

Cyclopropane is a colorless, saturated hydrocarbon gas of sweet odor and taste; non-irritating to the respiratory system if not too concentrated; molecular weight 42.05; specific gravity 1.46 and liquifies at five atmospheres at ordinary temperature. It was first prepared by Freund in 1882 and its anesthetic properties were discovered by Henderson and Lucas, by animal experimentation, in 1929. Ralph M. Waters and his co-workers at the University oi Wisconsin conducted the first clinical experimentation during 1932 and 1933 and presented the first clinical report at the Congress of Anesthetists in Chicago in the fall of 1933. In the past few years the literature has been so voluminous that anything like a complete review would be impossible in the time allotted.

Cyclopropane, when properly handled by an experienced anesthetist, is a safe anesthetic; probably, considering both immediate and remote effects, the safest general anesthetic we possess to date. In fact, with the exception of one drawback, which will be discussed later, this agent approaches our dream of an ideal anesthetic.

Cyclopropane must be administered by the closed CO_2 absorption method only—its cost would make the open, or semi-closed, method prohibitive to the average patient. Thus its high cost proves an advantage as it forces the use of the closed method, which has been one of the marked advances in anesthesia of the past few years. When used by this method it is no more expensive than other gas anesthetics. The gas is not altered by the alkali in the absorber. Cyclopropane is a very potent agent producing analgesia in concentrations of from 3 to 5% in oxygen; unconsciousness with mixtures of 6 to 8% and surgical anesthesia in concentrations of 25 to 30%. The induction time is rapid—from 2 to 3 minutes, and this may be reduced with premeditation. Its diffusion is rapid and the fact that it is not altered or combined in the body makes its elimination by way of exhalations very rapid, the major part being eliminated in a period of ten minutes, but complete desaturation may take several hours.

The fact that Cyclopropane is efficient in such low concentrations is a safety factor because, in the presence of a free airway, there is no danger of the development of an anoxemia with the attendant dangers of cerebral anoxia and permanent cortical damage. Many such cases have been reported with nitrous-oxide and I personally have seen two deaths and one permanent personality change following prolonged itrous-oxide dental anesthesias with their long-continued partial cerebral anoxias.

Cyclopropane follows the general course of all inhalation anesthetics. It diffuses from the alveolar air to the blood stream and is distributed to the body tissues. As it is estimated that all the blood in the body passes through the lungs in approximately 1½ minutes, it is readily seen how quickly a rapidly diffusible agent will saturate the blood and be made available to body tissues. Nervous tissue is the first to become saturated, and fat, the last.

The signs of anesthesia are the same as other inhalation anesthetics, but due to its rapidity of action one must be very alert to detect these signs as the patient passes through the various stages of anesthesia.

Careful experimental work as to the effect of cyclopropane on the blood may be summerized as follows: Combining power decreased 2—7%; no significant change in diabetes; total base may increase slightly. Glucose is increase 8 to 30 mgm. per 100 c.c. Nonprotein nitrogen and urea are increased during anesthesia but with an almost immediate return to normal after anesthesia. Phosphates are increased for several hours then return to normal. With concentrations of 16 to 20 mgs. per 100 c.c. for anesthesia, the concentrations in venous blood equals arte-

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rial blood in 15 minutes and concentration in fetal blood equals maternal blood in 15 minutes of anesthesia. Potassium ions decreased in plasma. Sodium ions may decrease slightly. Lactic acid increases slightly. Contrary to some clinical observations, the clotting and bleeding time is unchanged. There is an increase in leucocytes with a maximum in 8 hours and a return to normal in 48 hours; poly morphs increase relatively and absolutely; no change in platelets; no change in number of volume of red cells nor hemoglobin; 2½ times more drug in red cells than plasma. The oxygen content is increased but capacity unchanged. Peripheral venous blood arterialized.

Effects on the central system: There is an early depression of the cortex which accounts for the rapidity of induction; there is some depression of the respiratory center with slowed respiration; in deep anesthesia the respiratory center fails before circulation, which is a safety factor, as it gives the watchful anesthetist time to overcome approaching danger. The cough, swallowing and vomiting reflexes are abolished at the beginning of surgical anesthesia. There is no significant change in the vasomotor system. There is little change clinically, in intracranial pressure.

EFFECTS OF CYCLOPROPANE

I shall now try to give a short summary of the effects of Cyclopropane on the various important organs of the body. These findings are from various experimental and clinical reports. The respiratory system: Mucous membranes are not irritated unless high concentrations are used, but there is a decreased action of the cilia. If the mucous membranes were irritated with a consequent increased secretion, this decreased ciliary action would be a disadvantage. but, as there is no such increased secretion, clinically there seems to be no effect. Reflex spasm of the larynx is sometimes bothersome but is usually due to a too concentrated mixture and can be overcome by an increased percentage of oxygen or the addition of helium. Respiratory movements are decreased in deep anesthesia and apnea may develop. This is not a disadvantage as, in the presence of a free air-way, it is very simple to breathe for the patient by bag pressure until spontaneous respiration is resumed. In fact some anesthetists, following the Guedel technique, deliberately place the patient in apnea and carry on with artificial respiration by bag pressure. This gives a relaxation comparable to spinal anesthesia, but, personally, I prefer to have the patient do his own breathing.

Heart: The rate is, as a rule, decreased but the cardiac output is increased. Arhythmas are of fairly common occurrence but are readily controlled by increasing the oxygen in the mixture. One point should be stressed with reference to the heart—it is dangerous to use ephedrine or adrenaline, especially in light cyclopropane anesthesia because it enhances the irritability of automatic tissue and may result in ventricular fibrillation Blood pressure is only slightly effected unless respiratory depression has been allowed to develop.

Liver: Cyclopropane has little or no effect on liver function either clinically or experimentally. There is no evidence of dysfunction by dye test and no hystological changes have been reported.

Kidneys: Secretion of urine is suppressed during anesthesia but is followed by a post-anesthetic polyuria. I have seen no reports of hystological changes.

Clinically, cyclopropane is without question the most efficient general inhalation anesthetic agent we have today. From the patient's standpoint its rapid induction makes it pleasant to take. It gives, as a rule, the most profound relaxation of any of the inhalation anesthetis except chloroform, which has too many disadvantages to be considered; this relaxation at times approaching that of spinal anesthesia. It is quickly absorbed and rapidly eliminated.

DISADVANTAGES

Cyclopropane, however, has one disadvantage which has kept it out of many hospitals and localities throughout the country. Cyclopropane is explosive—so are all other inhalation anesthetics with the exception of chloroform and nitrous oxide. The first of these exceptions has caused many times more deaths, immediate and remote, than have been reported from cyclopropane explosions, but these deaths are not spectacular enough to draw front-page headlines. The second exception, nitrous oxide, is inefficient for surgery requiring any degree of relaxation unless ether is added, when it becomes a more dangerous explosive than cyclopropane. The dangers of explosion can be largely eliminated if ordinary precautions are used such as

elimination of open flames, cautious use of the cautery and so forth. The great danger is from the least understood cause—static spark. By the use of an intercoupling device this may be reduced to a minimum but will always be present to some extent, being more dangerous in dry weather. A high relative humidity in the operating room, above 65%, will tend to diminish the danger of static spark. Also care should be taken by anyone entering the operating room to discharge any static they may carry at a distance from the danger area, that is, an area of from one to one and one-half feet from the closed system mask. No woolen clothes should be worn in the operating room and no rubber soled shoes.

Because thousands of people are killed yearly from automobiles, should we abandon their use? Because a few spectacular accidents have occurred, should we deprive the public the advantage of this most efficient anesthetic agent?

In closing I will state definitely that, all things considered, cyclopropane will continue to be my choice of inhalation anesthetics until a better one is given us.

724 South Orange Drive.

AMERICA AT WAR

RECOMMENDATIONS TO ALL PHYSICIANS WITH REFERENCE TO THE NATIONAL EMERGENCY

All inquiries concerning the Procurement and Assignment Service should be sent to the Executive Officer, 5654 Social Security Building, Fourth and Independence avenues S. W., Washington, D. C.

I. Medical Students

A. All students holding letters of acceptance from deans for admission to medical colleges and freshmen and sophomores of good academic standing in medical colleges should present letters or have letters presented for them by their deans to their local boards of the Selective Service System. This step is necessary in order to be considered for deferment in class II-A as a medical student. If local boards classify such students in class I-A, they should immediately notify their deans and if necessary exercise their rights of appeal to the board of appeals If, after exhausting such rights of appeal, further consideration is necessary, request for further appeal may be made to the state director and if necessary to the national director of the Selective Service System. These officers have the power to take appeals to the President.

B. Those junior and senior students who are disqualified physically for commissioners are to be recommended for deferment to local boards by their deans. These students should enroll with the Procurement and Assignment Service for other assignment.

C. All junior and senior students in good standing in medical schools who have not done so should apply immediately for commission in the Army or the Navy. This commission is in the grade of Second Lieutenant, Medical Administrative Corps of the Army of the United States, or Ensign H. V. (P.) of the United States Navy Reserve, the choice as to Army or Navy being entirely voluntary. Applications for commission in the Army should be made to the corps area surgeon of the corps area in which the applicant resides, and applications for commission in the Navy should be made to the commandant of the naval district in which the applicant resides. Medical R. O. T. C. students should continue as before with a view of obtaining commissions as First Lieutenants, Medical Corps, on graduation. Students who hold commissions, while the commissions are in force, come under the jurisdiction of the Army and Navy authorities and are not subject to induction under the Selective Service Act. The Army and Navy authorities will defer calling these officers to active duty until they have completed their medical education and at least twelve months of internship.

II. Recent Graduates

On successful completion of the medical college course, every individual holding commission as a Second Lieutenant, Medical Administrative Corps, Army of the United States, should make immediate application to the Adjutant General, United States Army, Washington, D. C., for appointment as First Lieutenant, Medical Corps, Army of the United States. Every individual holding commission as Ensign H. V. (P.) U. S. Navy Reserve, should make immediate application to the commandant of his naval district for commission as Lieutenant (J. G.) Medical Corps Reserve, U. S. Navy. If appointment is desired in the grade of Lieu-

tenant (J. G.) in the regular Medical Corps of the U. S. Navy, application should be made to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

III. Twelve Months' Interns

All interns should apply for a commission as First Lieutenant, Medical Corps, Army of the United States, or as a Lieutenant (J. G.), United States Navy or Navy Reserve. On completion of twelve months' internship, except in rare instances in which the necessity of continuation as a member of the staff or as a resident can be defended by the institution, all who are physically fit may be required to enter military service. Those commissioned may then expect to enter military service in their professional capacity as medical officers; those who failed to apply for commission are liable for military service under the Selective Service acts.

IV. Hospital Staff Members

Interns with more than twelve months of internship, assistant residents, fellows, residents, junior staff members and staff members under the age of 45 fall within the provisions of the Selective Service acts, which provide that all men between the ages of 20 and 45 are liable for military service. All such men holding Army commissions are subject to call at any time and only temporary deferment is possible, on approval of the application made by the institution to the Adjutant General of the United States Army certifying that the individual is temporarily indispensable. All such men holding Naval Reserve commissions are subject to call at any time at the discretion of the Secretary of the Navy. Temporary deferments may be granted only on approval of applications made to the Surgeon General of the Navy.

All men in this category who do not hold commissions should enroll with the Procurement and Assignment Service. The Procurement and Assignment Service under the executive order of the President is charged with the proper distribution of medical personnel for military, governmental, industrial and civil agencies of the entire country. All those so enrolled whose services have not been established as essential in their present capacities will be certified as available to the Army, Navy, governmental, industrial or civil agencies requiring their services for the duration of the war.

V. All Physicians Under Forty-Five

All male physicians under 45 are liable for military service, and those who do not hold commissions are subject to induction under the Selective Service acts. In order that their service may be utilized in a professional capacity as medical officers, they should be made available for service when needed. Wherever possible, their present positions in civil life should be filled or provisions made for filling their positions, by those who are *(a)* over 45, *(b)* physicians under 45 who are physically disqualified for military service, *(c)* women physicians and *(d)* instructors and those engaged in research who do not possess an M. D. degree but whose utilization would make available a physician for military service.

Every physician in this age group will be asked to enroll at an early date with the Procurement and Assignment Service. He will be certified for a position commensurate with his professional training and experience as requisitions are placed with the Procurement and Assignment Service by military, governmental, industrial or civil agencies requiring the assistance of those who must be dislocated for the duration of the national emergency.

VI. All Physicians Over Forty-Five

All physicians over 45 will be asked to enroll with the Procurement and Assignment Service at an early date. Those who are essential in their present capacities will be retained and those who are available for assignment to military, governmental, industrial or civil agencies may be asked by the Procurement and Assignment Service to serve those agencies.

The maximal age for original appointment in the Army of the United States is 55. The maximal age for original appointment in the Naval Reserve is 50 years of age.

RECENT APPOINTMENTS

President Roosevelt has appointed Dr. George Baehr, Chief Medical Officer of the Office of Civilian Defense, to be a member of the Health and Medical Committee of the Office of Defense Health and Welfare Services. Dr. Irvin Abell, Louisville, Kentucky, chairman of the Committee on Medical Preparedness of the American Medical Association, is chairman of the Health and Medical Committee and other members are the Surgeon General of the U. S. Army, Major

General James C. Magee; the Surgeon General of the U. S. Navy, Rear Admiral Ross T. McIntire; the Surgeon General of the U. S. Public Health Service, Dr. Thomas Parran, and the chairman of the Division of Medical Sciences, National Research Council, Dr. Lewis W. Weed, Baltimore. The Office of Defense Health and Welfare Services is a part of the Office for Emergency Management which in turn is part of the Executive Office of the President. The director of the ODHWS is Paul V. McNutt, who is also Federal Security Administrator.

EMERGENCY UNITS MOBILIZE

Organization of Emergency Medical Services is gaining momentum throughout the country, a roll call held by the Medical Division in connection with the observance of Civilian Defense Week, November 11 to 16, shows.

Outstanding physicians have been designated as chairmen of health and medical committees on thirty State Defense Councils. In twenty-three of these states a physician has also been appointed as Chief of Emergency Medical Service.

The roll call reveals that 478 city and county Chiefs of Emergency Medical Service have been appointed; Emergency Medical Field Units have been organized in 383 hospitals and an additional 24 have been established unrelated to a hospital. In Massachusetts, Vermont, New York, Delaware, Pennsylvania and Arizona, an Emergency Medical Service has been organized on a state-wide basis. In California, Los Angeles city and county and San Francisco city and county also have well planned organizations for the administration of emergency medical service.

In Massachusetts 351 Chiefs of Emergency Medical Service have been appointed; in Vermont 38 local chiefs have been designated and in New York State 72 county and local chiefs are now at work. New York City has a Chief of Emergency Medical Service for the entire city and an assistant chief for each of the five boroughs. Pennsylvania is rapidly achieving complete state organization, 119 local chiefs of medical service having been appointed. Emergency Field Units have been set up as follows: 283 in Massachusetts; two in Vermont; 73 in New York State; 24 in Delaware; one in Virginia, and 24 in California.

The Red Cross reports that more than 1,000,000 persons will be trained this year in first aid, an increase of over 400,000 above last year. Although this work has only recently been organized, sixty-one chapters are giving nurses' aide courses. Twenty-eight classes were being conducted by 74 instructors and 118 students had completed courses and received certificates from the Red Cross. To date, 343 aides have been placed on duty in various hospitals and have given 8,246 hours of service. One hundred and seventy-seven hospitals and other institutions are being used for the training or the service of nurses' aides or for both purposes.

SOCIETY ACTIVITIES

WARNER W. WATKINS, M. D.
Secretary
Arizona State Medical Association

L. B. COHENOUR, M. D.
Secretary
New Mexico Medical Society

LOUIS BRECK, M. D.
Secretary
Southwestern Medical Association

CHAS. F. RENNICK, M. D.
Secretary
El Paso County (Texas) Medical Society

EL PASO COUNTY (TEXAS) MEDICAL SOCIETY

(W. John Pangman, Associate Editor)

The El Paso County Medical Society met February 9, 1942, at Hotel Cortez. This program was given: "Some Observations on the Pathogenesis of Appendicitis," Dr. L. O. Dutton. Discussed by Dr. Jesson L. Stowe, Dr. John L. Murphy and Dr. J. Leighton Green.

In a recent communication to members of the El Paso County Medical Society, Dr. F. O. Barrett, president, had this to say:

We have bought a war. It *must* be paid for.

You are aware of the effort to pay some of this cost by the sale of Defense Bonds. Soon you will be called upon to sign a pledge to do your part in this. In doing so remember:

1. El Paso County's share to be raised is $7,000,000 for 1942.
2. This is 10% of our net income.
3. This is not a gift—it is an investment. A bond is better than a tax receipt.
4. This is our most effective way of preventing inflation.
5. This MUST effort for Victory can have no limit.
6. Each of us MUST purchase bonds to the limit of our ability.

Please help your committee by facilitating their contact with your employes.

The regular meeting of the El Paso County Medical Society was held in the Tea Room of the Hotel Cortez January 26, 1942, presided over by Dr. Barrett, president.

The program committee announced that they were disappointed in the speaker that they had scheduled for this meeting, therefore this program was hurriedly arranged these past few days. The following clinical cases were presented for diagnosis:

1. Presented by Dr. Laws. A presumable case of pulmonary tuberculosis with pathological fracture of the clavicle. Discussion by Dr. Homan, Sr., Dr. Waite, Dr. Cummins, Dr. Holt and Dr. Hart. The final diagnosis: Carcinoma of the bones and lungs.

2. Abscess of the lungs. Presented by Dr. Laws. Sputum negative for T. B. Marked improvement with collapse therapy. Discussed by Dr. Homan, Sr., Dr. Waite, Dr. Dutton and Dr. Rawlings.

3. Presented by Dr. Curtis. Tumor of the kidney. Crossly diagnosed as cystic, microscopically adeno carcinoma. Discussed by Dr. Waite and Dr. Hart.

4. Presented by Dr. Robert Thompson. Case of stone and pylonephrosis of kidney. Discussed by Majo Dodson.

A motion was made by Dr. R. B. Homan, Sr., seconded by Dr. Rawlings, to make Dr. H. T. Safford an honorary member for life of the El Paso County Medical Society. Unanimously carried. Dr. Murphy stated that he would also like to have the Society give a big hand for three other of the older members: Dr. Laws, Dr. Waite and Dr. Homan, who were active in their practice and the work of the County Medical Society. Heavy applause. A committee consisting of Dr. Waite, Dr. Homan and Dr. Brunner was appointed by the chair to call on Dr. Safford and acquaint him with the action of the Society.

A vote on changing the dues was not taken because it was stated that the amendment was not correctly worded in the notice sent out. The secretary was instructed to direct all inquiries as to the citizenship of physicians practicing in El Paso to the Board of Censors committee, the chairman of which is Dr. B. F. Stevens.

Reported by Charles F. Rennick, M. D., Secretary.

NEW MEXICO MEDICAL SOCIETY

(L. B. Cohenour, Associate Editor)

The regular meeting of the McKinley County Medical Society was held on Wednesday evening, January 28, 1942, at St. Mary's Hospital, Gallup, New Mexico.

A motion was approved by the members to supplement the presentation of scientific papers, at the regular meetings, with motion picture films. Drs. D. F. Monaco and V. Accardi were appointed to choose and procure suitable films to be shown.

The coordinator of the Gallup Council of National Defense is to be contacted by a committee from the Medical Society, to arrange definite plans for a Civilian Defense organization, in regard to the hospital, medical doctors and nurses in this community.

It was decided to institute a campaign of Public Health Education, by the local Society, to explain to the general public the importance of competent medical attention. Drs. W. D. Anthony and E. B. Beaver were appointed as a committee to arrange material for a series of articles to be published in the local newspapers.

A letter from the sheriff's office was read, thanking the members for their prompt cooperation at the time of the recent accident, near Gallup, which involved an army troop train.

An informal supper party was held on Satur-

day evening, January 17, at the El Navajo Hotel, by the Medical Society. Dr. D. M. MacCornack, who left this week to make his home in Boulder City, Nevada, and Dr. Watson, the retiring president, were the honored guests.

A medical paper was presented by Dr. Vincent Accardi on "Head Injuries." Its summary:

It was stated that head injuries were to be considered and method of treatment given, only so far as brain trauma was concerned.

A classification of brain injuries was made, stressing the point that any one of them, no matter how slight at the time of injury, may eventually lead to serious complications and even death.

Each of the brain injuries—concussions, contusions, epidural hemorrhages, subdural hemorrhages, lacerations of the brain, was discussed in detail. A careful watch of the patient was emphasized to ascertain the exact diagnosis and possible localization of site of injury, especially from the standpoint of treatment.

Surgical indications were given, and medical treatment was presented in all its varied forms, including treatment of shock, dehydration, sedatives, advisability of spinal punctures, etc.

Reported by William Dodd Anthony, M. D., Secretary.

SOUTHWESTERN MEDICAL ASSOCIATION

(Louis W. Breck, M. D., Associate Editor)

The most significant happening in the Southwestern Medical Association this winter has been the unfortunate death of Dr. LeRoy S. Peters of Albuquerque. Dr. Peters was ill for some little time preceding his death and was unable to attend the Southwestern Medical Association's meeting in El Paso in November. His absence was most conspicuous and his friends all missed him. Dr. Peters had always been a very active member of our Association and had held many offices in it, including the presidency for the year 1938. He was always counted on at the annual meetings to contribute constructive suggestions to the Society and his personality always served to enliven the meetings. We will all miss one of the Association's stauchest supporters and one of our best friends.

At this particular time of the year the Association is usually the least active as far as its affairs are concerned because the annual meeting is out of the way and plans for the next meeting are only in the formative stage. Dr. C. A. Thomas of Tucson, our president, has as yet not announced definite plans for the 1942 session which is to be held in Albuquerque, but in the next issue of the Journal we will probably have something definite.

One thing of great importance at the present time is the question of dues. Our annual dues are $3.00 and are now due and payable and all the members have received their bills for this period. These should all be met as promptly as possible for the annual dues furnish the revenue for carrying on the activities of the Association which activities consist chiefly in planning and putting on the annual meeting.

There is considerable thought and discussion amongst the members of the Southwestern Medical Association as to what effect the war will have upon our organization. As yet there is nothing definite to announce along this line, but it is probable that some changes in the annual meeting will become necessary. The Executive Committee will work this out in the near future. One thing which is of great concern to all of us is the Journal "Southwestern Medicine" and the Board of Managers and the Editor have seen to it that there is no possibility of a hitch in the publication of the Journal. As many of the members know, our Editor, Maurice P. Spearman, M. D., is at the present time in the United States Navy. Fortunately he has an assignment which makes it possible for him to carry on the Journal in as good or better a manner than he did when he was in private practice, so that there is no concern from that standpoint. Apparently the position to which he has been assigned is permanent or at least semi-permanent and the Journal will continue in its present editorship. Steps were taken at the November, 1941, meeting of the Board of Managers of the Journal, and with the assistance of the present editor, to provide for a new editor immediately should the present editor have a change in his assignment which would make it impossible for him to carry on his duties. We are all very glad that Dr. Spearman will be able to carry on the work of editing the Journal in all probability for he has been doing an excellent job of it.

Reported by Louis Breck, M. D., Secretary.

MISCELLANY

AMERICAN COLLEGE OF SURGEONS ANNOUNCES APRIL "WAR SESSIONS"

Between April 1 and May 1, inclusive, the American College of Surgeons will hold one-day "War Sessions" on problems of military service and civilian defense for medical and hospital personnel, as follows:

Apr.	Place	States	Headquarters
7	Denver	Colorado, Wyoming	Cosmopolitan Hotel
10	Salt Lake City	Utah, Idaho	Hotel Newhouse
13	Portland	Oregon, Washington, Montana	Multnomah Hotel
16	San Francisco	Northern California, Nevada	Fairmont Hotel
18	Los Angeles	Southern California	Biltmore Hotel
21	Phoenix	Arizona, New Mexico	Westward Ho Hotel
24	Dallas	Texas, Oklahoma	Baker Hotel

The meetings open at 9:00 A.M. with panel discussions on treatment of war injuries for the medical profession and a forum on civilian defense as related to hospitals, led by a medical officer of the United States Office of Civilian Defense, for hospital personnel. From 10:45 to noon a joint meeting for physicians, surgeons and hospital representatives is held, with medical officers of the United States Army, the United States Navy, and the Office of Civilian Defense, as speakers. At the joint luncheon which follows, the Procurement and Assignment Service in relation to the medical profession and to hospitals, is discussed by Major Sam F. Seeley, Executive Officer, a specially appointed delegate. In the afternoon, panel discussions for the medical profession are held on treatment of wounds of soft parts and on fractures, and for hospital representatives on special problems incident to the war as affecting hospitals.

The dinner meeting and the panel discussions which follow on treatment of burns and prevention and treatment of shock, are for the entire group. The representatives of the army and the navy medical corps collaborate with civilian surgeons in leading these discussions.

Hospital associations and state and county medical societies are co-operating with the American College of Surgeons in conducting the sessions.

PRACTICAL METHOD OF STUDYING RHEUMATIC CASES

There are certain fundamental procedures that are necessary in order to classify and to study a case properly. These should be carried out before starting treatment, having tonsils removed, etc. The following procedures and their interpretations are suggested as being significant, but all may not be essential to make a decision regarding the proper treatment. The following plan of study is suggested. There are three general classes.

1. A complete history, especially regarding the onset of the disease, occupation family background, age, metabolic disturbances, glandular activity and infections, especially those of childhood.
2. A thorough physical examination.
3. A complete blood count: a secondary anemia is frequently present in rheumatic cases. A correction of this factor should obviously be made early in the case. The reason for the anemia may vary from a bleeding peptic ulcer to nutritional disturbances and rheumatic symptoms may be secondary.
4. Complete urinalysis to rule out kidney disturbances or systemic diseases which indicate the patient's general conditions, e. g., neuritis associated with diabetes.
5. Sedimentation rate to aid in the diagnosis

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or to use as a comparison in estimating whether infectious processes are subsiding.

6. Basal metabolism to determine whether hypothyroidism or hypometabolism is present as a contributing factor. In this connection it should be mentioned that a low rate of ovarian activity may be present also, as Francis Hall and others have pointed out. This may have a bearing on the basal rate.
7. Blood chemistry studies, especially total and non-protein nitrogen, cholesterol, C vitamin level and uric acid, as gout is a very common disturbance.
8. Stool examination; this should include cultures, examination for parasites, undigested food and blood.
9. Ewald test meal; many patients are discovered to have an absence of free hydrochloric acid, whose digestion and nutrition improve with its addition.
10. X-rays:
    a. Teeth for evidence of infection.
    b. Sinuses if indicated.
    c. Colon fluoroscopy for diverticulae, etc.
    d. Certain joints if unusual bony changes are suspected.
11. Bacteriology:
    a. Cultures from nasopharynx, tonsils, and sinus drainage, if present.
    b. Cultures from aspirated joints.
    c. Cultures from the prostate and cervix.
    d. Blood cultures in certain cases.
    e. Cultures from rectal crypts.
12. Serology:
    a. Kahn or Wasserman.
    b. Complement fixation if indicated.

—*Ill. Med. Jo.*

INDUSTRIAL PHYSICIANS MEET

The American Association of Industrial Physicians and Surgeons, and the American Industrial Hygiene Association will hold their joint annual convention in Cincinnati from April 13 to 17, 1942. A program is in preparation in which important medical and hygienic problems associated with the present huge task of American industry will be presented and discussed in clinics, lectures, symposia and scientific exhibits. The central purpose of the

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meeting will be to provide a five-day institute for the interchange and dissemination of information on new problems as well as for the consideration of up-to-date methods of dealing with those that are well known. The industrial physicians have taken responsibility for the program of the first two and one-half days and the hygienists for the remainder of the five days, but most of the subjects chosen for discussion will be of interest not only to physicians, but equally so to industrial engineers and executives.

REHABILITATION OF DISQUALIFIED REGISTRANTS

In order to have a basis for estimating the prevalence of defects among registrants for military service under the conscription act of 1940, the United States Public Health Service has reanalyzed certain results of the medical findings for the World War draft of 1917-18.

Twenty-one per cent were rejected for military service, thirty-one per cent were classified as not available for general military service (including the rejections), and fifty-two per cent had one or more recorded defects. These figures for the last war were summarized by Rollo H. Britten, senior statistician, and George St. J. Perrott, chief of division of public health methods, Public Health Service *(Public Health Reports, 56:2)*.

Defects per 1,000 drafted men in 1917-18 were:

Orthopedic impairments	213.16
Eye defects	61.01
Cardiovascular-renal diseases	50.20
Underweight	31.14
Hernia and inguinal rings	55.36
Tuberculosis (all forms) actual or suspected	24.74
Defective or deficient teeth	26.27
Nervous or mental diseases	24.53
Ear defects	15.45
Venereal diseases	46.77
Varicose veins, varicocele	8.75
Goiter	11.38
Hypertrophic tonsilitis	33.77
Arthritis and allied affections	3.48
Asthma	2.33
Other diseases or defects	53.56

These figures may be used as the basis for considering a program of physical rehabilitation of registrants disqualified for general military service under the conscription act of 1940.

—Med. Record.

MEDICAL RESERVE OFFICER SHORTAGE

The Army Medical Corps, already facing a shortage of several thousand in its peace-time reserve officer objective, encountered additional

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competition this week in the form of an appeal from the British Red Cross, with the approval of the President, for 1,000 young American doctors to help man British military and civilian hospitals.

Age limits and other requirements for service with the British Red Cross are reported to be approximately the same as those pertaining to the Medical Corps Reserve with the result that volunteers who go to England automatically diminish the chances of the Medical Corps filling its reserve procurement needs.

The Medical Department has made strenuous efforts in recent months to build up the Reserve Corps to the peace-time quota with some measure of success but the campaign is still far short of its goal, and, in fact, it was learned this week that resignations at the present time are exceeding new applications.

The British appeal, bolstered by the outspoken support of the President who said "service in this cause presents a splendid opportunity," is expected to seriously curtail applications for Medical Reserve commissions at the very time when they are most needed. The shortage that now exists in the peace-time procurement program will be considerably magnified should the Army be expanded rapidly or a state of emergency be declared to exist. The war-time quota would be much larger than the peace-time figure which the department is unable to fill at this time.—*Army and Navy Journal.*

AVERAGE PERCENTAGE OF WAR INJURIES OF ALL ARMIES IN THE WARS OF 1866, 1870-71, 1904-05, 1914-18

Head, Face and Neck	15
Dorsum and Spine	5
Chest	7
Abdomen	2
Pelvis	3
Upper Extremities	34
Lower Extremities	32
Eyes, Ears, Genitals	2
Total Percentage	100

—*Mil. Surg.*

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BOOK NOTES

L. O. DUTTON, M. D.
(Book Review Editor)
Mills Bldg., El Paso, Texas

[NOTE:—Three books reviewed in February issue were not identified as to their publisher. The books: "Synopsis of the Preparation and Aftercare of Surgical Patients; "Microbes Which Help and Destroy Us;" "Synopsis of Genitourinary Diseases." The publisher: C. V. Mosby Co., St. Louis.]

A PRIMER ON THE PREVENTION OF DEFORMITY IN CHILDHOOD by
Richard Beverly Raney, B. A., M. D. Associate in Orthopaedic Surgery, Duke University School of Medicine, Durham, N. C. In Collaboration with
Alfred Rives Shands, Jr., B. A., M. D. Medical Director, Alfred I. duPont Institute of the Nemours Foundation, Wilmington, Delaware: Visiting Professor of Orthopaedic Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania. Pp. 475 with index. Fabrikoid. National Society for Crippled Children in the United States of America, Inc. Elyria, Ohio.

This is excellent book. It is a good source for disseminating information concerning the causes and the prevention of deformity. It is written in such language that it can reach all those concerned. It is valuable to other lay people associated with this type of work, it should be invaluable to nurses, social workers, teachers, and all those who have to deal with crippled children or those dealing with diseases of children which may cause crippling deformities. It is written in crear, concise, simple language and contains a glossary of medical terms which tends to clarify the subject and make the reading interesting. This book should prove valuable to the general practitioner who can turn to it for advice when he is confronted by some crippling condition. It is also useful for those who do Orthopaedic Surgery as a reference book.

The first portion of the book concerns those diseases and conditions which are likely to lead to a deformity. The prevention of these diseases is taken up. In the second portion of the book a regional classification of deformities is taken up and every condition which may produce deformity is fully described and the methods of preventing the deformity are clearly elucidated. This book is highly recommended.

W. Compere Basom.

EDITH CAVELL, by Helen Judson: The Macmillan Company, New York; 1941.

This book, of about 300 pages, presents a succinct, apparently reliable story of the life and death of Edith Cavell. It does more. It gives the reader an intimate acquaintance of the

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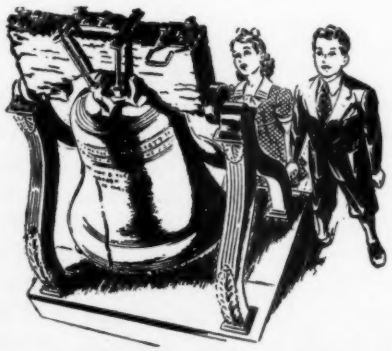

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status of nursing in Belgium as late as the start of the present century. It gives also a picture or a leading gruff, quick-tempered, well-intentioned, Belgian surgeon, Dr. Depage, and of his diplomatic, genial, forceful wife who compensated for many of his short-comings. Then, too, one gets from the book an excellent understanding of the behavior of the Germans in their occupation of Belgium as well as of the Belgians and their passive resistance to the demands of their conquerors.

Edith Cavell was an honest individual; and an individual she really was! Reared as she was in an English vicarage family, with all the natural restrictions which went with the most idealistic set-up of such, she could not be otherwise. Hers was a true desire to serve suffering humanity in a most bountiful manner irrespective of selfish desires and comforts.

The first portion of the book dealing with the early life of Edith shows plainly that the author centered mainly upon presenting the heroine's life in Belgium, especially upon her activity in the war. As a result, the early chapters seem, to me, a trifle dull. None of us is so much interested in these early years as in the last ones, but the book should be able to hold one's interest from the start.

Miss Cavell's early life may be said to be ordinary for England except for the rigidity of training in morals and ethics and in religion; her education was more than customary for young women in her stratum of society. She early took a position as governess in a prominent Belgium family. There she acquired perfect use of the French language and came to know Belgians' customs and manners of life. After several years in this position she returned to England and took training as a nurse in order to be of greater assistance to humanity.

Because of her acquaintance with Belgium and the people and their language, her nurse's training and her high ideals, she was selected to head the first nurses-training school established in Belgium. In this work she had many trials and tribulations; these make interesting and instructive reading. Then came the war.

She cared for soldiers of all nationalities who came her way and needed care; who is there to criticise her if her sympathies were mostly with those of the allied armies. After the Germans over-ran Northern France and Belgium many

allied soldiers, often left on the battlefield as dead, wandered in hiding from place to place, even though commanded to report to German police-headquarters under penalty of death for failure to comply. Hundreds, perhaps thousands, failed to report.

Miss Cavell was one of the many who assisted these soldiers to escape usually by way of neutral Holland. In her unfair "inquisitional" trial without benefit of counsel she frankly admitted her part. The author propounds the theory that, even with the most rigid interpretation of the German military code her execution was wholly illegal.

The story is more than worth reading; it is entertaining; it is instructive. It is an excellent portrayal of the high character of Edith Cavell's acts and bravery.

The publisher's art is superb. The author's style is most readable. She will be glad to have her attention called to two errors: on page 270, line 13, the word "women" is used where "woman" was intended; on page 281, third line of second paragraph "have" is used where "has" would be the correct form. These detract not one whit. —*O. H. Brown.*

MAGIC IN A BOTTLE, by Milton Silverman, Ph. D.: The Macmillan Company, New York: 119417

Everyone—nearly—of the laity as well as physicians has heard of morphin, quinin, cocain, sulfanilamide, aspirin, vitamins and other drugs of which the author writes; but who even of the physicians knows the human interest stories of the discovery and development of each of them? Certainly few of us.

Doctor Silverman is evidently both a scientist and a writer. He knows how to make entertaining facts entertaining. His first training was probably in writing. The laymen and the physicians will enjoy this book and the physicians may safely recommend it to their enquiring friends and patients.

The romance of the struggle with the accompanying heartaches and tribulations associated with the discovery and perfecting of each of the drugs is comparable in a measure to that of quinin:

King Phillip IV of Spain appointed the Count of Chinchon to the control of all of South America. He took a new wife and departed for his new job. They encountered mosquitoes as well as new friends. The Countess developed malaria. Her life was despaired of- news of her illness

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spread far and wide. From a distant point one day came a sweaty tired Indian runner bearing a package containing gray-brown bark from a certain kind of tree recommended by the Indians to cure fevers prevalent in their country. Instructions for taking the medicine were enclosed. The Countess was given several doses. Lo! and behold! She improved.

The bark was taken to Europe. Its worth was proved. Then started long years of intrigue and trickery to obtain young quinaquina trees and seeds to plant elsewhere. The Peruvians and others of South America strove to maintain a monopoly of this wonderful bark so much sought after. The story of isolating the pure quinine from the bark was long and fascinating.

Thus, to a great extent, has it been with most other drugs. So far as my knowledge goes, the facts and truths presented are such. I repeat, they are readable and entertaining.

—O. H. Brown.

BERKELEY MOYNIHAN, Surgeon, by Donald Bateman; with a preface by Lord Moynihan. New York. The Macmillan Company; 1940. $4.00.

Berkeley Moynihan was certainly a great surgeon; the author leaves no doubt of that. He was so imbued with this idea that nearly every sentence he writes exudes his praise. One wonders would not the reader be more impressed by a recitation of the facts of the great man's life than by being told how wonderfully wonderful the man was in everything he undertook.

Moynihan came from an army family and he had intended to follow in this line. His mother ultimately had her way and thence came the surgeon. He forever remained a provincial surgeon of England but was famed the world over.

Dr. Bateman had known Moynihan intimately, having been in the family home a great deal as a friend of the son; because of his own training in surgery he has been able to pass judgment or to present in a manner that others may judge of the remarkable work of the subject of the monograph.

The book is interesting and inspiring.

—O. H. Brown.

MODERN METHODS OF IMMUNIZATION

Physicians who are concerned with the immunization of infants and children have as their goal the use of materials which will not sensitize the patient and the utilization of routes of administration that cause least discomfort. Definite assistance toward these objectives is provided by use of combined antigens in the opinion of a recent observer (J. Florida M. A., 28:330, 1942). The author has employed Combined Diphtheria Toxoid-Tetanus Toxoid, Alum Precipitated (Lilly) for the last three years without any untoward reactions.

The combination of diphtheria and tetanus toxoids is effected by mixing suitable amounts of the respective toxins which have been detoxified by the use of formaldehyde, and precipitating from this combination with alum the diphtheria and tetanus toxoids. The individual toxoids are tested for toxicity prior to mixing, and the combined alum precipitated toxoid is tested for toxicity after precipitation. Potency is determined by injecting guinea pigs with a human dose. After four weeks the blood serums of these animals must show at least 2 units of diphtheria antitoxin and 2 units of tetanus antitoxin per cubic centimeter of blood serum.

Should exposure to either diphtheria or tetanus occur before immunization against each disease is completed, the usual procedures for immediate protection of unimmunized subjects should be considered. The combined toxoid is not for treatment, it is a prophylactic measure of active immunization against diphtheria and tetanus.

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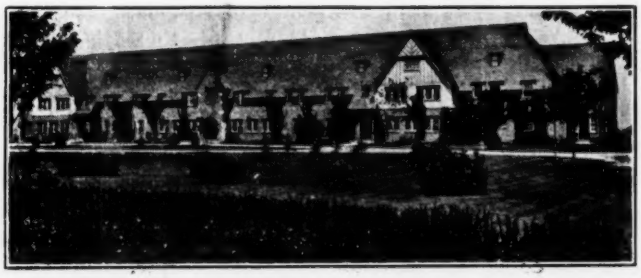

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Tuesday, April 21, 1942
Westward Ho Hotel - Phoenix

PROGRAM

9:00-10:30 a. m.

Forum: Civilian Defense as Related to Hospitals.

10:45 a. m.-12:15 p. m.

Joint Meeting, Physicians, Surgeons and Hospital Representatives:

The Organization and Functions of the Medical Department of the United States Army.

The Organization and Functions of the Medical Department of the United States Navy.

The Doctor and the Hospital in Civilian Defense.

12:30-2:00 p. m.

Joint Luncheon, Physicians, Surgeons and Hospital Representatives:

Address: The Procurement and Assignment Service.

2:15-5:00 p. m.

Panel Discussion: Special Problems Incident to the War as Affecting Hospitals.

Opening Statement: Hospitals and the War.

Organization of the Hospital for Civilian Defense.

The Procurement and Assignment Service and the Hospital.

Priorities and the Problem of Obtaining Hospital Equipment Furnishings and Supplies Essential to Rendering Adequate Services to the Patient.

Maintaining Adequate Professional and Non-professional Personnel During Enlistment in the Military Services and Industrial Expansion.

Maintaining Standards of Hospital Service During the War.

Meeting the Increasing Costs of Hospital Service.

Conservation During Wartime as Applying to Hospital Personnel Labor and Supplies of All Kinds.

6:00-7:30 p. m.

Dinner for Physicians, Surgeons and Hospital Representatives.

7:30-8:00 p. m.

Activities of the American College of Surgeons and Their Relation to the Defense Program.

8:00-10:00 p. m.

Panel Discussion: Treatment of Burns.
Prevention and Treatment of Shock.

Chairman: Dr. E. Payne Palmer Phoenix.
Secretary: Dr. Victor S. Randolph Phoenix
Counselor: Dr. C. A. Thomas Tucson.

DR. DARBY, NOTED SCIENTIST IN VITAMIN FIELDS, ON BORDEN STAFF

The Borden Vitamin Company, which has been bringing into its fold a number of research and production leaders in that field, announces that Dr. Hugh H. Darby, distinguished Columbia scientist and author of many authoritative works, has joined its staff for research and de-

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velopment in the production and application of vitamins and hormones.

Dr. Darby, who has been with the Department of Biochemistry of the College of Physicians and Surgeons for the past seven years as research associate, is a specialist there on vitamins and hormones, achieving wide attention for his work on the extraction and physiology of sex hormones.

Among other distinctions, Dr. Darby is noted as the discoverer of the existence of Vitamin D in plant life, and for his spectographic research on vitamins A, D and K. He originated the system, widely used by the Department of Agriculture, of heat treatment for the destruction of harmful insects.

Announcement of Dr. Darby's new activities was made by Charles F. Kieser, Vice President of The Borden Company and President of The Borden Vitamin Company, a division that has been expanding its activities widely in the production of vitamins.

Dr. Darby is a native of Scotland. He attended Cambridge University. He served with the Royal Engineers in the World War, emerging as a captain. He obtained the degrees of B. A. and M. A. at Columbia. That university also conferred the degree of Ph. D. on him in 1928. In that year, Dr. Darby joined the Department of Agriculture, with which he remained three years. Thereafter, he took up his present work with the College of Physicians and Surgeons.

For the past several years Dr. Darby's research and development activities at Columbia have been conducted under a grant of the Carnegie Corporation.

ANY PHYSICIAN MAY EXHIBIT "WHEN BOBBY GOES TO SCHOOL" TO THE PUBLIC

Under the rules laid down by the American Academy of Pediatrics, their new educational-to-the-public film "When Bobby Goes to School" may be exhibited to the public by any licensed physician in the United States.

All that is required is that he obtain the endorsement by any officer of his county medical society. Endorsement blanks for this purpose may be obtained on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

Such endorsement, however, is not required for showings by licensed physicians to medical groups for the purpose of familiarizing them with the message of the film.

"When Bobby Goes to School" is a 16-mm. sound film, free from advertising, dealing with the health appraisal of the school child, and may be borrowed by physicians without charge or obligation on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

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